THE UNIVERSITY OF TEXAS AT AUSTIN Date: 09/04/2014

RECOMMENDATION FOR CHANGE IN ACADEMIC RANK/STATUS

Name: Cox, Brady R. EID: brcox Present Rank: Assistant Professor

Years of Academic Service ***(Include AY 2014-15 in each count)***:

At UT Austin since: 09/01/2012 (month/day/year) In Present Rank: 3.00 (# of years) In Probationary Status **(TT only)**: 3 (# of full years or N/A)

Primary Department: Civil, Architectural, and Environmental Engineering College/School: Cockrell School of Engineering

Joint Department: - College/School: -

Other Department(s): -

Recommendation actions[1]:

By Budget Council/Executive Committee: Promote

Vote[2] for promotion 23; Against 0; Abstain 1; Absent 3; Ineligible to vote 0

By Department Chair: Promote

Vote for promotion ____; Against ____; Abstain ____; Absent ____

By College/School Advisory Committee: Promote

Vote for promotion 7; Against 0; Abstain 0; Absent 0

By Dean: Promote

Administrative Action: Promote to Associate Professor

Date Action Effective: September 1, 2015
(To be submitted to the Board of Regents as part of the annual budget.)

By: _____ For the President Date: December 17, 2014

[1]See "Chart of Recommended Actions" for eligible recommended actions applicable to specific conditions and administrative levels.
[2]Record all votes for and against promotion, abstentions by eligible voting members, and the number of absent eligible voting members. The number of budget council/executive committee members ineligible to vote due to rank should also be recorded. Enter zero where it would otherwise be blank.

EVPP/10.14

EXHIBIT
P's 151

THE UNIVERSITY OF TEXAS AT AUSTIN
COCKRELL SCHOOL OF ENGINEERING

Office of the Dean • 301 E. Dean Keeton Street, C 2100 • Austin, Texas 78712-2100

Dean's Assessment
Brady R. Cox
Civil, Architectural, and Environmental Engineering

Dr. Brady Cox earned his BS in Civil Engineering in 2000 and his MS in Civil Engineering in 2001, both at Utah State University. He received his PhD in Civil Engineering at the University of Texas at Austin in 2006. Dr. Kenneth H. Stokoe II was his PhD advisor. Dr. Cox started his academic career as an assistant professor at the University of Arkansas in 2006. He was considered for promotion at the University of Arkansas during the 2011-12 academic year and would have been appointed as an associate professor in September 2012 had he not joined the faculty at the University of Texas at Austin. If successfully promoted to associate professor, Dr. Cox will have been in the rank of assistant professor for three years at the University of Texas at Austin. Technically, this case is early, but Dr. Cox will have served a total of nine years in rank, including his six years at the University of Arkansas.

Ten external letters were received with five reviewers selected by the budget council and five reviewers recommended by the candidate. No invitations to be a reviewer were declined or ignored. The letter writers were predominately from US universities, including the University of California at Berkeley, Rensselaer Polytechnic Institute, Georgia Tech, the University of Illinois at Urbana-Champaign, the University of Washington, the University of Michigan, and Brigham Young University. Letters were also received from the University of Auckland, the US Army Corps of Engineers, and ISTerre Grenoble. The reviewers are renowned in the field of geotechnical engineering, and three are members of the National Academy of Engineering.

Teaching
Dr. Cox has taught distinct courses in the two years in rank as an assistant professor at the University of Texas. He has taught two, required undergraduate courses: CE 311K, *Introduction to Computer Methods* (one time), and CE 357, *Geotechnical Engineering* (two times). He also taught two graduate courses, CE 387R.2, *Soil and Rock Dynamics* (one time), and CE 397, *Underground Openings* (one time).

Across all his courses, Dr. Cox's instructor ratings range from 4.0 to 4.7 with an average of 4.4. His course ratings range from 3.1 to 4.2 with an average of 3.8. His instructor ratings are above average as compared with faculty within the Cockrell School of Engineering. The somewhat low average course rating is partly due to a low rating in CE 397. This course is outside Dr. Cox's primary area of expertise, and he agreed to develop a new course to expand the diversity of graduate course offerings in geotechnical engineering. The students appreciated the technical topics addressed in the course, but expressed concerns that the course was not well organized. They also felt that the inclusion of multiple guest lecturers exacerbated organizational issues. However, based on his record in other courses at the University of Texas and the University of Arkansas, CE 397 is not considered to be representative of his dedication to teaching.

Student comments in the other courses indicate that Dr. Cox's teaching has been well-received. The peer-evaluation reports provided by the department are consistent and indicate the effectiveness of the candidate in engaging the students

Research
Dr. Cox's research focuses on geotechnical earthquake engineering. He conducts non-intrusive experiments in the field to characterize the properties of soil and rock below the surface. He frequently travels to the sites of major earthquakes around the world to collect perishable data, develop subsurface profiles, and assess liquefiable

soils. Recently, he has made considerable progress in quantifying uncertainty associated with surface wave methods for subsurface imaging.

While in rank at the University of Texas, Dr. Cox has produced five peer-reviewed journal papers[1] and three conference proceedings. As a basis of comparison, twelve assistant professors in the Department of Civil, Architectural and Environmental Engineering were successfully promoted in the past ten years. The average number of journal papers published in rank was 2.6/year and the median was 2.2/year. Dr. Cox's record at UT is consistent with these expectations.

As an assistant professor, he has 22 peer-reviewed journal papers (33 career total) and 26 conference proceedings (33 career total). His publications are included in journals such as the *Journal of Geotechnical and Geoenvironmental Engineering*, *Earthquake Spectra*, and *ASTM Geotechnical Testing Journal*. The primary contributors to his publications are his graduate students and collaborators at other universities. In particular, Cox participated in field studies following earthquakes in Hawaii (2006), Haiti (2010), New Zealand (2010 and 2011), and Japan (2011). Papers documenting these investigations, and the subsequent data analyses, represent 14 of his journal papers in rank.

While in rank as an assistant professor at the University of Texas at Austin, Dr. Cox has received $0.62 million ($3.7 million total as an assistant professor) in research funding with $0.41 million ($1.9 million total as an assistant professor) being his share. He has had a total of 16 funded research projects, with three since he arrived at the University of Texas. Dr. Cox was the PI on eight (50%) of these projects. Funding agencies include the National Science Foundation, United Nations Development Programme, U.S. Department of Homeland Security, and the Arkansas State Highway and Transportation Department. Of note, Dr. Cox received a National Science Foundation CAREER/PECASE grant in 2011.

The review letters for Dr. Cox were outstanding. They identified his contributions to the field and highlighted him as having outstanding potential. For instance:

> Dr. Pierre-Yves Bard (ISTerre Grenoble) states, "My personal feeling is thus that Dr B. Cox has already made significant contributions to geotechnical earthquake engineering either by developing (or contributing to develop) innovative technologies or by mastering enough a wide variety of geophysical tools to put them together in an optimal way for a broad variety of applications, and to issue very welcome warnings on the limitations of some of the presently used tools or engineering practice."
>
> Dr. Jonathan D. Bray (University of California Berkeley) states, "Dr. Cox has already made several significant contributions to the field of earthquake engineering, and he possesses outstanding potential for making future contributions to our profession."
>
> Dr. Ricardo Dobry (Rensselaer Polytechnic Institute, NAE) states, "The impact of his work - especially in the area of noninvasive measurement of relevant ground properties using portable instruments that can be deployed shortly after an earthquake - is really quite incredible considering his youth, and he is poised to make even greater innovative contributions in the near future."
>
> Dr. Steven Kramer (University of Washington) states, "He is certainly the top untenured geotechnical engineering faculty member in the country, and probably one of the top few that have not yet been promoted to full Professor."

[1] The department chair and budget council statements refer to six journal papers in rank at UT, but Cox, Wood, and Hazirbaba (2012) was submitted for review in February 2011, while Dr. Cox was as assistant professor at the University of Arkansas. Dr. Cox attributes this work to the University of Arkansas in his description of co-authored works.

Only one letter, from Dr. David Frost at Georgia Tech, raised concerns with Dr. Cox's record. Dr. Frost noted that Dr. Cox's publication record was "somewhat variable" because 50% of Dr. Cox's journal papers as a faculty member (both Texas and Arkansas) were published in 2011 and that Dr. Cox published extensively with his first PhD graduate (Clint Wood), but had not written journal papers with other graduate students[2]. Dr. Frost noted that the concentration of publications in 2011 may be a result of delays in publications resulting from reconnaissance efforts in Haiti. Dr. Frost recommended that Dr. Cox develop "a more consistent and stable research portfolio[3]," which would permit him to "effectively mentor graduate students through all aspects of the research enterprise." Overall, Dr. Cox's letter was positive and he concluded by stating "….I believe that Dr. Cox has developed the necessary dossier to deserve promotion to the rank of Associate Professor with tenure."

Advising and Student Mentoring

Dr. Cox has been active in advising both graduate and undergraduate students. He has graduated one PhD student at the University of Texas who followed him during his transition from University of Arkansas. He is currently supervising four additional PhD students. Dr. Cox has also graduated one MS student at the University of Texas at Austin and six MS students from the University of Arkansas. With regard to undergraduate students, Dr. Cox has mentored three undergraduate students in research while in rank at the University of Texas at Austin. Dr. Cox has placed one PhD graduate as an assistant professor at the University of Arkansas.

University Service

Since his arrival in 2012, Dr. Cox has been a member of two departmental committees: Curriculum Committee and the Distinguished Lecture Series Committee. While at University of Arkansas, Dr. Cox was a member of the Graduate Student Committee, the Scholarship Committee, and Facilities and Grounds Committee.

Professional Service

Dr. Cox has extensive public service. He is an Associate Editor for *ASCE Journal of Geotechnical and Geoenvironmental Engineering*. He is a member of four professional committees: NEES Data and Curation Subcommittee, ASTM Committee D18 on Soil and Rock, ASCE Geo-Institute Earthquake Engineering and Soil Dynamics Committee, and ASCE Geo-Institute Geophysical Engineering Committee.

Other Evidence of Merit or Recognition

Dr. Cox received the Network for Earthquake Engineering Simulation (NEES) Outstanding Contributor Award for the most influential research report in geotechnical engineering in 2014, the Presidential Early Career Award for Scientists Engineers (PECASE) in 2012, and the 2010 Hogentogler Award from the American Society of Testing and Materials for a "paper of outstanding merit" in the *ASTM Geotechnical Testing Journal*. The PECASE award is a truly outstanding distinction, given to only the top career award winners from various agencies. Dr. Cox was sponsored by NSF for the PECASE. Approximately 100 junior faculty receive the PECASE in the entire country in a year. Dr. Cox is also an Associate Editor for *ASCE Journal of Geotechnical and Geoenvironmental Engineering*, which shows recognition in his research field.

Overall Assessment

Dr. Cox has a strong research portfolio with grants from a variety of funding sources and a suitable number of publications for an assistant professor. He has graduated one PhD student and seven MS students. He currently is supervising four PhD students. Dr. Cox has demonstrated a strong teaching record and a willingness to develop new courses to enhance the educational opportunities for the graduate students. His professional service is

[2] Dr. Frost also refers to one publication with "an MS student at his former institution" in his letter; however, Dr. Cox has not published journal papers with other graduate students in his group. The confusion arose because Dr. Cox's CV contains a typo related to Cox, Wood, and Hazirbaba (2012). Dr. Hazirbaba's name is underlined indicating that he was one of Dr. Cox's graduate students, but he was a faculty member at the University of Alaska Fairbanks at the time that the research documented in this paper was conducted.

[3] In this case, "stability" refers to research funding that is not tied to earthquake reconnaissance.

outstanding. He is a recipient of the PECASE award, and the quality of his research has been recognized by ASTM and NEES.

Whenever we hire a faculty member who received his/her PhD from the University of Texas at Austin, I believe that extra scrutiny is required to ensure that the faculty member has developed a research program that is distinct from that of their advisor. At first glance, this is not clear with Dr. Cox because his PhD advisor (Dr. Stokoe) is the PI for two of the three research grants that he received at UT. In addition, several of the external referees refer to Dr. Stokoe in their letters. This issue is not addressed by the Budget Council or the department chair, but I was the department chair when Dr. Cox was hired and I am quite familiar with his area of research. I am confident that Dr. Cox has developed an independent and sustainable research program.

I can highlight two distinct areas where Dr. Cox has extended his research beyond that of Dr. Stokoe:

- Dr. Stokoe uses large geotechnical shakers (viborseis) to generate surface waves for shear wave velocity profiling. Dr. Cox has also used this equipment extensively, but as part of his CAREER award, he has developed techniques to obtain deeper profiles using passive wavefields. This is a significant development and holds great potential for the future.
- Also as part of his CAREER award, Dr. Cox is using probabilistic methods to quantify the uncertainty associated with surface wave testing. As noted in the Budget Council statement, Dr. Cox organized a session at the 2014 ASCE Geo-Congress and demonstrated convincingly the variability of analyses of a common set of surface wave data. His results were "eye-opening."

I agree with the external reviewers that Dr. Cox is at the forefront of geotechnical earthquake engineering. Dr. Frost is correct that Dr. Cox's extensive involvement in earthquake reconnaissance studies has limited his production of journal papers with his own students, but Dr. Cox has established an independent reputation by working with leaders in geotechnical engineering at top universities in the US and abroad.

I believe that Dr. Cox exceeds all expectations for promotion to associate professor, and support this case without reservation.

Sharon L. Wood, Dean
1 November 2014

Department of Civil, Architectural and Environmental Engineering
Statement by Department Chair

Candidate: **Brady Cox**

Brady Cox joined the faculty of the Department of Civil, Architectural and Environmental Engineering (CAEE) in September 2012 after six years on the faculty of the Department of Civil Engineering at the University of Arkansas. Brady's general area of expertise is geotechnical engineering, with a focus on near-surface investigations in relation to amplification[1] and liquefaction[2] of soil during seismic events.

[1]The USGS defines amplification in terms of increased shaking levels by a focusing of seismic energy caused by geometric features of the sediment velocity structure.

[2]Liquefaction refers to a process by which sediment temporarily loses its strength and acts as a liquid, common during major earthquakes.

Assessment Methodology

This assessment is based on a detailed analysis of (1) candidate curriculum vitae and statements, (2) Budget Council statements, (3) letters from external reviewers, (4) CIS evaluations for all courses taught in rank, (5) written student comments related to courses taught in rank, (6) peer teaching evaluations completed during current academic rank, (7) publications and citations, and (8) Budget Council discussions and vote on whether the candidate should be promoted.

All members of the CAEE Budget Council had an opportunity to review candidate statements, Budget Council statements, and letters by external reviewers prior to the Budget Council meeting on promotions held on 25 August 2014. For each promotion case a Budget Council member made a formal presentation to summarize the candidate's performance in teaching, research, service, and advising, as well as honors received and letters by external reviewers. An open discussion then took place until a vote by secret ballot was called. Members of the Budget Council evaluated promotion candidates in terms of whether their overall performance merits promotion (Yes, No, Abstain).

A summary of the Budget Council discussion and vote is provided below, along with the Chair's assessment of Brady's performance in teaching, research, academic advising, administrative and committee service (at UT and in profession), as well as honors and recognition. A summary and Chair's recommendation on the promotion case is then presented.

Budget Council Discussion and Vote

The Budget Council was strongly in support of Brady's promotion to associate professor (Overall recommendation: **23 Yes, 0 No, 1 Abstain**).

Following a presentation of his accomplishments in rank there was no discussion of Brady's case by the Budget Council, as it was considered such a strong case. Since the vote on each promotion case was by secret ballot and there was no discussion of Brady's case, there is no way of definitively knowing why one Budget Council member voted to abstain. However, in the specific ballot for which "abstain" was checked, the word "early" was written below the word "Abstain", presumably referring to the fact that Brady has only been at UT for two years. But, this is only speculation.

Teaching

Brady has taught four different courses (2 undergraduate and 2 graduate) to five different classes of students since joining the faculty of CAEE two years ago. One of these is a core second-year undergraduate course (CE311K – *Introduction to Computer Methods*) taken by all undergraduate students in the Civil Engineering and Architectural Engineering degree programs. The other three are Geotechnical Engineering courses, including one base level undergraduate course (CE357 – *Geotechnical Engineering*) that serves as an introduction to the field of geotechnical engineering, and two graduate courses (CE387R.2- *Soil and Rock Dynamics*; CE397 – *Design of Underground Openings*). A total of 150 students (76% undergraduate) have enrolled in these five courses. Class sizes have ranged from 10 (CE397) to 43 (CE357). The average class sizes in his undergraduate and graduate courses have been 38 and 18, respectively.

Brady is a very good teacher and shows signs of becoming an excellent teacher in the future. His instructor rating has been greater than or equal to 4.0 in all five courses he has taught at UT. His average instructor and course ratings across all courses taught at UT are 4.38 and 3.78, respectively. His average instructor rating is significantly greater than the 5-year average and slightly greater than the median for assistant professors in both CAEE and the Cockrell School of Engineering (CSE). Brady's average instructor and course ratings in undergraduate courses are 4.5 and 3.9, respectively. His instructor rating in undergraduate courses is considerably higher than the 5-year average/median instructor ratings for assistant professors in both CAEE (4.07/4.27) and CSE (4.01/4.09). Brady's average instructor and course ratings in his two graduate courses are 4.20 and 3.60, respectively. His average instructor rating in these graduate courses is greater than the CAEE and CSE 5-year averages for assistant professors in graduate courses (4.09 and 4.19, respectively) but lower than the median values of 4.50 (CAEE) and 4.40 (CSE).

Many students in his undergraduate courses comment that Brady is very prepared, organized, entertaining, and excited about the material he teaches. During his first offering of CE357 - *Geotechnical Engineering*, many students complained about excessive amounts of homework. This was not the case the second time he taught the course. From first to second offering his instructor evaluation in this course increased from 4.3 to 4.5, and the course evaluation increased from 3.5 to 4.0.

Brady's best evaluations were in CE311K – *Introduction to Computer Methods* (4.7 I / 4.2 C) during the spring 2014 semester. Importantly, Brady had never taught this course in his previous eight years in academia. Student comments were generally full of praise for Brady's organization/preparedness, lecture style, and fairness.

Brady's poorest evaluations were in CE397 - *Design of Underground Openings* (4.0 I / 3.1 C) in the fall of 2013. This was a very challenging course for Brady to teach. He had personally never taught a course on this topic. More importantly, he had never even had the subject matter in his own education. Students felt that the course was poorly organized (course well organized = 2.9/5), in contrast to student comments in his other courses. All other sub-topic ratings on CIS student evaluations were 4.0 or greater. Several students in the course stated that there were too many guest lecturers, which appeared to add to the lack of organization.

Brady's average course evaluations were largely skewed by the poor course evaluation in CE397, and the fact that his undergraduate courses have all been in required courses as opposed to upper-division elective courses that students choose to take out of personal interest in the subject matter. If the course evaluation for CE397 is removed, Brady's overall average course evaluation increases from 3.78 to 3.95. There was no mention of teaching deficiencies during Budget Council discussions of Brady's case.

Brady has had only two peer evaluations since he joined the faculty of CAEE. Both were in undergraduate courses (CE311K and CE357) and both reflected that Brady is a very good teacher in the classroom. I reviewed one of his lectures in CE311K and found it to be an outstanding lecture. My only negative comment was that on a couple of occasions when he turned to write on the board his voice faded a bit. At the end of lecture I met briefly with his entire class and in his absence. I asked the class to rate the lecture on a scale of 1 to 10, 10 being a great lecture for Brady, 1 being a poor lecture and 5 being an average lecture for Brady. The students felt that the lecture was a 5 (almost unanimously). I asked whether he had given a poor lecture all semester and the class was unanimous in stating "no". The class had glowing reviews of Brady as a teacher and had glowing comments about his preparedness for lectures and his fairness. These comments are consistent with student evaluations at the end of the term.

Brady is a fairly tough grader in his undergraduate courses (does not practice grade inflation). The average class GPA in his three undergraduate courses at UT is 2.91. He has been consistent in this respect throughout his career. In six years at the University of Arkansas Brady taught 319 undergraduate students with a weighted class GPA of 2.83/4.

Brady also takes teaching very seriously. During his eight years in academia he has completed three weeklong summer workshops, including the ASCE's Excellence in Civil Engineering Education (ExCEEd) teaching workshop.

Brady has performed well as a teacher both at the University of Arkansas and the University of Texas. He has distinguished himself as someone who is willing to teach and develop new courses as well as required undergraduate courses for CAEE and the Geotechnical Engineering Group. He is currently a very good teacher and has the potential to be an excellent teacher in the future.

Research

In lay terms, one might think of Brady as an international earthquake detective, rushing to the scene of seismic crimes and collecting data in order to better understand the nature of the crime and how to reduce the impacts of such crimes in the future. He does considerable research in the field and has served on Geotechnical Extreme Events Reconnaissance (GEER) teams deployed immediately after major earthquakes around the world. He has emerged as a leader in the implementation of surface wave methods to collect shear wave velocity data, which allows for greater knowledge of sub-surface properties and seismic responses that can be used for forecasting impacts of seismic events and engineering design parameters for protection during future earthquakes. There is a time element to collection of such data as some features of the ground are perishable after a seismic event. Brady and his team need to mobilize and get to the field quickly to collect their measurements, sometimes at locations half-way around the world, e.g., New Zealand. Brady has also made major contributions toward development of accurate methods for quantifying uncertainty in shear-wave velocity measurements, thus allowing an improved understanding of uncertainties in seismic performance of unimproved and improved ground sites during earthquakes, as well as safety factors that need to be built into future designs for earthquake protection.

Brady has established a solid base of students who have constituted his research teams at both the University of Arkansas and the University of Texas. He has served as advisor to seven students who have completed the M.S. degree (six at U of Arkansas) and one student who completed the Ph.D. degree (at UT). He is currently serving as advisor to four additional Ph.D. students at UT, three of whom have passed their qualifying exams. His research team has also included three undergraduate research assistants during his two years at UT.

To support his research teams Brady has been able to secure 16 funded grants during his career, eight as PI, and five of those as sole PI. He has served as PI or Co-PI on three sponsored grants since joining UT

(one as PI and two as Co-PI). His career (eight-year) research funding is $3.76 million ($1.92 million as his share). Of these totals, $619 K ($408 K his share) has been awarded since Brady joined UT. Brady has proven that he can secure competitive funds. Approximately 65% of his total research funding has been awarded by NSF, with approximately 25% from State agencies and 10% from industry. Funds from the National Science Foundation have included a prestigious CAREER/PECASE totaling $422K and entitled *Revolutionizing Surface Wave Methods for Engineering Analyses – from Deterministic and Incoherent to Probabilistic and Standardized (DIPS)*. Importantly, Brady has a clear vision of future diversification of research funding with additional sponsors such as the U.S. Geological Survey, U.S. Department of Energy, Department of Homeland Security, and industry.

Brady is co-author of 22 papers in some of the best peer-reviewed journals in his field, including six papers since joining the faculty of UT (3/year at UT). He has two additional journal papers under review. Brady's career totals far exceed what is typical of journal publications for faculty who are successfully promoted from assistant to associate professor in CAEE; the 10-year median number of publications is 11. Furthermore, only three of his 22 papers are based on his Ph.D. dissertation, indicating that Brady has developed an independent research program. He also has 33 conference papers, a relatively large number for an assistant professor in civil engineering.

Brady's work is being well-cited for someone at this stage of his career. His work has been cited 234 times (Publish or Perish) and 274 times (Google Scholar). His h-index is 9 according to both Publish or Perish and Google Scholar, good for a faculty member in civil engineering at this stage in his career.

Letters by external reviewers underscore Brady's growing stature within the profession, and the importance of his work:

- *Jonathan Bray* (UC Berkeley)
  "He is a tremendous talent … "
  "He is on par or better than most young full professors in civil engineering."
  "Dr. Cox has already made several significant contributions to the field of earthquake engineering …"
  "Professor Cox is one of the best geotechnical earthquake engineering professors at this time in his career."
  "He is by far the youngest of the top people in his innovative area of research".

- *Ricardo Dobry*[*] (Rensselaer Polytechnic Institute)
  " …. has been remarkable by any measure ….
  " … at the forefront of earthquake engineering"
  "The impact of his work ….. is really quite incredible considering his youth …"
  "…very innovative and high-impact research, which is starting to revolutionize a very important area of earthquake engineering."

- *Youssef Hashash* (U of Illinois at Urbana-Champaign)
  "He has developed a strong reputation in his field."
  "He is amongst the top of his peers at similar academic institutions."

- *Steven Kramer* (U of Washington)
  "My first thought, upon seeing the subject matter of the letter, was that he was being considered for early promotion to Professor."
  "He is certainly the top untenured geotechnical engineering faculty member in the country, and probably one of the top few that have not been promoted to full professor."

- *W.F. Marcuson*[*] (U.S. Army Corps of Engineers)
  "In summary, I believe Brady Cox to be one of the top 2 or 3 academics in Civil Engineering in the USA, given his age and career stage."

- *Pierre-Yves Bard* (IS Terre Grenoble)
  "Despite his relatively young age (only 8 years after his PhD) he has an impressive experience at the national and international levels."

[*] Member of the National Academy of Engineering

Only one of the 10 external reviewers (*J. David Frost* of Georgia Tech) was somewhat restrained in his praise for Brady. He was confused about evidence of B.S. students participating in research activities, and the stage of four current Ph.D. students in their studies. He also points out that Brady had 50% of his publications in 2011. However, that is not surprising given that the fruits of his experimental efforts at the University of Arkansas were just paying off in the one to two years prior to this and there is typically a six month to one year (sometimes longer) period from submission to publication in the civil engineering field. Furthermore, Brady was working with primarily M.S. students at the University of Arkansas and PhD students are often more productive with respect to publications. Brady's publication rate in two years at the University of Texas has been 3/year with two additional papers already submitted for review. He is working with a much larger base of Ph.D. students at UT. Frost also suggests that Brady's reconnaissance efforts following the Haiti and New Zealand earthquakes consume a lot of time in the field and can slow down publication rates.

Brady has clearly established himself as an independent researcher who is well known and whose talents are recognized by his peers in North America and abroad. His research program should be highly sustainable. Earthquakes are not going away and populations continue to grow in seismically-active areas. Brady has developed a strong niche in the earthquake engineering field. He has shown that he can secure funds in a highly competitive environment (NSF), and also has a vision for continued diversification of his funding base in the coming years.

Academic Advising

Brady has taken an active role in advising and mentoring of both undergraduate and graduate students. He has graduated one Ph.D. student at UT; the student followed him to UT from the University of Arkansas to complete his Ph.D. degree and is now on the faculty of the University of Arkansas. Brady is currently supervising four additional Ph.D. students. He has supervised to completion seven M.S. students, six at the University of Arkansas and one at UT. By all accounts, Brady genuinely enjoys mentoring students and watching their growth as scholars. He believes experiencing different cultures and international networking are important, and strives to have his students travel for professional meetings and research as part of their educational experience. Based on his experiences as an undergraduate student, Brady is passionate about providing research opportunities for undergraduate students and has mentored three undergraduate students in research during his two years at UT.

Administrative and Committee Service

Brady's administrative contributions to the department meet the expectations of someone in the rank of assistant professor. He has served on the CAEE Curriculum Committee, an important and often time-consuming committee, and the CAEE Distinguished Lecture Series Committee.

Since 2012 Brady has served as Associate Editor of the ASCE (American Society of Civil Engineers) *Journal of Geotechnical and Geoenvironmental Engineering* (JGGE) recognized as one of the top

journals in the Geotechnical Engineering field. Unlike most journals, the JGGE requires associate editors to serve as one of the reviewers on every paper that the associate editor shepherds. By his count Brady has reviewed 31 papers for JGGE since 2012; this is a remarkable number of paper reviews for an assistant professor. Brady is also a member of four professional committees, including the Data and Curation Subcommittee of the Network for Earthquake Engineering Simulation (NEES), ASTM's Committee D18 on Soil and Rock, and two separate committees of the ASCE Geo-Institute. Over the past four years he has helped to organize two conference sessions and chaired three conference sessions at the Geo-Institute's annual GeoCongress.

Brady also gives of himself to the local community, speaking to K-12 students about earthquakes in an attempt to interest bright young minds about STEM fields.

Honors

Brady's work has been highly recognized. He received a National Science Foundation (NSF) CAREER Award in 2011 and a Presidential Early Career Award for Scientists and Engineers (PECASE) in 2012. The PECASE is particularly notable as recipients are selected as a small percentage of NSF CAREER recipients across all of NSF (the crème de la crème of young investigators). It is the highest honor bestowed by the federal government on outstanding early-career researchers. It is also notable that Brady has been PI or Co-PI on eight successful NSF proposals during his career.

In 2012, Brady was the sole U.S. representative invited to participate on the international technical committee related to a major benchmarking project on seismic ground motion assessment, initiated by Electricite de France. This attests to his growing international reputation.

Brady received the Hogentogler Award in 2010, an award given to the best paper published in the ASTM Geotechnical Testing Journal during the previous year. He was also co-recipient of the NEES Outstanding Contributor Award – Most Influential Geotechnical Research Project. Brady has also been an invited speaker at eight national/international meetings or conferences.

Summary

In summary, Brady is entering his 9th year in academia and has proven himself as a scholar at two different universities. He is a very good teacher and has potential to be an excellent teacher. He has established himself as an independent researcher and works in an important area of research that should be sustainable in the future. He is at least nationally recognized now, but a case can be made for Brady being internationally recognized in the earthquake engineering field. Letters written by external reviewers are very strong and reflect Brady's stature in his field. He is also very active in his profession. My sense is that Brady is someone who peer programs in geotechnical engineering would like to have on their faculty. We should be conscious of the possibility of losing Brady to a peer institution if he is not promoted.

I strongly endorse Brady's case for promotion, and do so without qualification.

Richard L. Corsi

Richard L. Corsi, Ph.D., P.E.
ECH Bantel Professor for Professional Practice and Department Chair
5 September 2014

THE UNIVERSITY OF TEXAS
Cockrell School of Engineering
Standard Resume

FULL NAME: Brady R. Cox
TITLE: Assistant Professor
DEPARTMENT: Civil, Architectural, and Environmental Engineering
EID: brcox

EDUCATION:

University of Texas at Austin	Civil Engineering(Geotech)	Ph.D.	May 2006
Utah State University	Civil Engineering(Geotech)	M.S.	August 2001
Utah State University	Civil Engineering	B.S.	May 2000

PROFESSIONAL REGISTRATION: P.E., State of Arkansas, Serial Number 14249

CURRENT AND PREVIOUS ACADEMIC POSITIONS:

University of Texas at Austin (UT)	Assistant Professor	Fall 2012 - Present
University of Arkansas (UA)	Assistant Professor	Fall 2006 – Summer 2012

OTHER PROFESSIONAL EXPERIENCE:

HONORS AND AWARDS:

NEES Outstanding Contributor Award – Most Influential Geotechnical Research Project; 2014
Presidential Early Career Award for Scientists and Engineers (PECASE); 2012
John L. Imhoff Award for Research, College of Engineering; University of Arkansas; 2012
National Science Foundation (NSF) Faculty Early Career Development (CAREER) Award; 2011
Hogentogler Award for ASTM Geotechnical Testing Journal "paper of outstanding merit"; 2010
Outstanding Researcher in Civil Engineering, University of Arkansas; 2010-2011
George H. Mitchell Award for Excellence in Graduate Research, University of Texas; 2005
Earthquake Engineering Research Institute (EERI) Graduate Fellow; 2004
Eagle Scout, Boy Scouts of America; 1993

MEMBERSHIPS IN PROFESSIONAL AND HONORARY SOCIETIES:

Member, Earthquake Engineering Research Institute (EERI), 2004-present
Member, American Society of Civil Engineers (ASCE), 2006-present
Member, Geotechnical Extreme Events Reconnaissance (GEER), 2006-present
Member, Arkansas Governor's Earthquake Advisory Council (AGEAC), 2007-2012

UNIVERSITY COMMITTEE ASSIGNMENTS:

Departmental-	Member, Curriculum Committee (UT)	2012-present
	Member, Distinguished Lecture Series Committee (UT)	2012-present
	Member, Graduate Student Committee (UA)	2006-2012
School-	None	
University-	Member, Scholarship Committee (UA)	2009-2012
	Member, Facilities and Grounds Committee (UA)	2011-2012

PROFESSIONAL SOCIETY AND MAJOR GOVERNMENTAL COMMITTEES:

Associate Editor, ASCE *Journal of Geotechnical and Geoenvironmental Engineering*, 2012-present
Member, NEES Data and Curation Subcommittee, 2011-present
Member, ASTM Committee D18 on Soil and Rock, 2010-present
Member, ASCE Geo-Institute Earthquake Engineering and Soil Dynamics Committee, 2008-present
Member, ASCE Geo-Institute Geophysical Engineering Committee, 2008-present

COMMUNITY ACTIVITIES:

K-12 outreach lecturer on earthquakes (refer to presentations below)

PUBLICATIONS:

A. Refereed Archival Journal Publications

1. Terrell, R.G., Cox, B.R., Stokoe II, K.H., Allen, J.J., and Lewis, D. (2003). "Field Evaluation of the Stiffness of Unbound Aggregate Base Layers in Inverted Flexible Pavements," *Transportation Research Record, Journal of the Transportation Research Board* 1837, pp. 50-60.
2. Chang, W-J., Rathje, E.M., Stokoe II, K.H., and Cox, B.R. (2004). "Direct Evaluation of Effectiveness of Prefabricated Vertical Drains in Liquefiable Sand," *Soil Dynamics and Earthquake Engineering*, 24(9-10), pp. 723-731.
3. Rodriguez-Marek, A., Alva Hurtado, J.E., Cox, B.R., Meneses, J., Montalva, G.A., Moreno, V., Olcese, M., Sancio, R., Wartman, J. (2007). "Geotechnical Aspects of the August 15, 2007 Pisco, Peru Earthquake," *Revista Internacional de Desastres Naturales, Accidentes e Infraestructura Civil (International Journal of Natural Disasters, Accidents, and Civil Infrastructure,* 7 (2-3), pp. 239-258.
4. Cox, B.R., Stokoe II, K.H., Rathje, E.M. (2009). "An In-Situ Test Method for Evaluating the Coupled Pore Pressure Generation and Nonlinear Shear Modulus Behavior of Liquefiable Soils," *ASTM Geotechnical Testing Journal,* 32(1), pp. 11-21.
5. Cubrinovski, M., Green, R.A., Allen, J., Ashford, S., Bowman, E., Bradley, B., Cox, B.R., Hutchinson, T., Kavazanjian, E., Orense, R., Pender, M., Quigley, M., Wotherspoon, L. (2010). "Geotechnical Reconnaissance of the 2010 Darfield (Canterbury) Earthquake," *Bulletin of the New Zealand Society for Earthquake Engineering*, 43(4), pp. 243-320.
6. Wong, I.G., Stokoe II, K.H., Cox, B.R., Lin, Y-C., Menq, F.-Y. (2011). "Shear-Wave Velocity Profiling of Strong Motion Sites That Recorded the 2001 Nisqually, Washington Earthquake," *Earthquake Spectra*, 27(1), pp. 183-212.
7. Cox, B.R., Beekman, A.N. (2011). "Intramethod Variability in ReMi Dispersion and V_s Estimates at Shallow Bedrock Sites," *Journal of Geotechnical and Geoenvironmental Engineering,* 137(4), pp. 354-362.
8. Yong, A., Hough, S.E., Cox, B.R., Rathje, E.M., Bachhuber, J., Dulberg, R., Hulslander, D., Christiansen, L., Abrams, M.J. (2011). "Seismic-zonation of Port-au-Prince Using Pixel- and Object-based Imaging Analysis Methods on ASTER GDEM," *Journal of Photogrammetric and Remote Sensing*, 77(9), pp. 909-921.
9. Olson, S.M., Green, R.A., Lasley, S., Martin, N., Cox, B.R., Rathje, E., Bachhuber, J., and French, J. (2011). "Documenting Liquefaction and Lateral Spreading Triggered by the 12 January 2010 Haiti Earthquake," *Earthquake Spectra*, 27(S1), pp. S93-S116.
10. Green, R.A., Olson, S.M., Cox, B.R., Rix, G.J., Rathje, E., Bachhuber, J., French, J., Lasley, S., and Martin, N. (2011). "Geotechnical Aspects of Failures at Port-au-Prince Seaport during the 12 January 2010 Haiti Earthquake," *Earthquake Spectra*, 27(S1), pp. S43-S65.
11. Rathje, E.M., Bachhuber, J., Dulberg, R., Cox, B.R., Kottke, A., Wood, C., Green, R.A., Olson, S., Wells, D., Rix, G. (2011). "Damage Patterns in Port-au-Prince during the 2010 Haiti Earthquake," *Earthquake Spectra*, 27(S1), pp. S117-S136.
12. Cox, B.R., Bachhuber, J., Rathje, E., Wood, C.M., Dulberg, R., Kottke, A., Green, R.A., Olson, S.M. (2011). "Shear Wave Velocity- and Geology-Based Seismic Microzonation of Port-au-Prince, Haiti," *Earthquake Spectra*, 27(S1), pp. S67-S92.

13. Green, R.A., Allen, J., Wotherspoon, L., Cubrinovski, M., Bradley, B., Bradshaw, A., Cox, B.R., and Algie, T. (2011). "Performance of Levees (Stopbanks) during the 4 September 2010 M_w7.1 Darfield and 22 February 2011 M_w6.2 Christchurch, New Zealand Earthquakes," *Seismological Research Letters*, 82(6), pp. 939-949.
14. Green, R.A., Wood, C., Cox, B.R., Cubrinovski, M., Wotherspoon, L., Bradley, B., Algie, T., Allen, J., Bradshaw, A., and Rix, G. (2011). "Use of DCP and SASW Tests to Evaluate Liquefaction Potential: Predictions vs. Observations during the Recent New Zealand Earthquakes," *Seismological Research Letters*, 82(6), pp. 927-938.
15. Wong, I.G., Stokoe II, K.H., Cox, B.R., Yuan, J., Knudsen, K.L., Terra, F., Okubo, P., Lin, Y-C. (2011). "Shear-Wave Velocity Characterization of the USGS Hawaiian Strong Motion Network on the Island of Hawaii and Development of a NEHRP Site Class Map," *Bulletin of the Seismological Society of America*, 101(5), pp. 2252-2269.
16. Wood, C.M., Cox, B.R., Wotherspoon, L.M., Green, R.A. (2011). "Dynamic Site Characterization of Christchurch Strong Motion Stations," *Bulletin of the New Zealand Society for Earthquake Engineering*, 44(4), pp. 195-204.
17. Cox, B.R., Wood, C.M., Hazirbaba, K. (2012). "Frozen and Unfrozen Shear Wave Velocity Seismic Site Classification of Fairbanks, Alaska," *Journal of Cold Regions Engineering*, 26(3), 118-145.
18. McCartney, J.S., Cox, B.R., Wood, C.M., El Tawati, A. (2013). "Performance Evaluation of Flexible Pavements Using a New Field Cyclic Plate Load Test," *ASTM Geotechnical Testing Journal,* 36(2), pp. 1-10.
19. Cox, B.R., Boulanger, R.W., Tokimatsu, K., Wood, C.M., Abe, A., Ashford, S., Donahue, J., Ishihara, K., Kayen, R., Katsumata, K., Kishida, T., Kokusho, T., Mason, H.B., Moss, R., Stewart, J.P., Tohyama, K., Zekkos, D. (2013). "Liquefaction at Strong Motion Stations and in Urayasu City during the 2011 Tohoku-Oki Earthquake," *Earthquake Spectra*, 29(S1), pp. S55-S80.
20. McCartney, J.S., Cox, B.R. (2013). "Role of Strain Magnitude on the Deformation Response of Geosynthetic-reinforced Soil Layers," *Geosynthetics International,* 20(3), pp. 174-190.
21. Green, R.A., Cubrinovski, M., Cox, B.R., Wood, C., Wotherspoon, L., Bradley, B., Maurer, B. (2014). "Select Liquefaction Case Histories from the 2010-2011 Canterbury Earthquake Sequence," *Earthquake Spectra*, 30(1), pp. 131-153.
22. Wotherspoon, L.M., Orense R.P., Jacka, M., Green, R.A., Cox, B.R., Wood, C.M. (2014). "Seismic Performance of Improved Ground Sites during the 2010-2011 Canterbury Earthquake Sequence," *Earthquake Spectra*, 30(1), pp. 111-129.
23. Wood, C.M. and Cox, B.R. (in review; 2014 expected). "Experimental Dataset of Mining-Induced Seismicity for Studies of Full-Scale Topographic Effects," *Earthquake Spectra*.
24. McGann, C.R., Bradley, B.A., Wotherspoon, L.M., Cox, B.R. (in review; 2014 expected). "Comparison of a Christchurch-Specific CPT-Vs Correlation and Vs Derived from Surface Wave Analysis for Strong Motion Station Velocity Characterization," *Bulletin of the New Zealand Society for Earthquake Engineering*.

B. Refereed Conference Proceedings

1. Terrell, R.G., Cox, B.R., Menq, F.-Y., Allen, J.J., and Stokoe II, K.H. (2003). "Stiffness of Unbound Aggregate Base Layers in Inverted Flexible Pavements," *ICAR, 11th Annual Symposium on Aggregates*, Austin, Texas, April 27-30, 2003.
2. Terrell, R.G., Cox, B.R., Stokoe II, K.H., Allen, J.J., and Lewis, D. (2003). "Field Evaluation of the Stiffness of Unbound Aggregate Base Layers in Inverted Flexible Pavements," *TRB 83rd Annual Meeting*, Washington, D.C., January 12-16, 2003.
3. Wong, I.G., Cox, B.R., Menq, F.-Y., Lin, Y-C., and Stokoe II, K.H. (2003). "V_s Surveys of Strong-motion Sites in the Puget Sound Region, Washington, and Preliminary Analysis of Shallow Site Response in the 2001 M 6.8 Nisqually Earthquake," *Seismological Society of America Annual Meeting*, Palm Springs, CA, April 14-16, 2003. Abstract only (published in *Seismological Research Letters*, 74(2), p. 248).

4. Stokoe II, K.H., Rathje, E.M., Cox, B.R., and Chang, W.J. (2004). "Using Large Hydraulic Shakers to Induce Liquefaction in the Field," *International Conference on Cyclic Behavior of Soils and Liquefaction Phenomena*, Bochum, Germany, March 31– April 2, 2004, pp. 313-320.
5. Rathje, E.M., Chang, W.-J., Cox, B.R., and Stokoe II, K.H. (2004). "Effect of Prefabricated Vertical Drains on Pore Pressure Generation in Liquefiable Sand," *11th International Conference on Soil Dynamics & Earthquake Engineering and 3rd International Conference on Earthquake Geotechnical Engineering*, Berkeley, CA, January 2004, pp. 529-536.
6. Rathje, E.M., Chang, W-J., Stokoe II, K.H., and Cox, B.R. (2004). "Evaluation of Ground Strain from In Situ Dynamic Response," Paper No. 3099, *13th World Conference on Earthquake Engineering*, Vancouver, Canada, August 1-6, 2004.
7. Stokoe II, K.H., Cox, B.R., Lin, Y.-C., Jung, M.J., Menq, F.-Y., Bay, J.A., Rosenblad, B., Wong, I. (2006). Invited Paper, "Use of Intermediate to Large Vibrators as Surface Wave Sources to Evaluate V_s Profiles for Earthquake Studies," 19th Symposium on the Application of Geophysics to Engineering and Environmental Problems, Seattle, WA, April 2-6, 2006, pp. 1241-1258.
8. Wartman, J., Cox, B.R., Meneses, J., Moreno, V., Olcese, M., Rodriguez-Marek, A., Sancio, R. (2008). "Landslides Triggered by the 15 August 2007 M8.0 Pisco, Peru Earthquake," Geophysical Research Abstracts, Vol. 10, EGU2008-A-00000, EGU General Assembly. EGU2008-A-08312, 2008.
9. Stokoe II, K.H., Menq, F.-Y., Wood, S.L., Park, K., Rosenblad, B.L., Cox, B.R. (2008). "Experience with nees@UTexas Large-scale Mobile Shakers in Earthquake Engineering Studies," The 3rd International Conference On Site Characterization (ISC-3), Taipei, Taiwan, April 1-4, 2008.
10. Wong, I., Stokoe II, K., Cox, B.R., Menq, F.-Y., Hoffpauir, C., Okubo, P. (2008). "Shear-Wave Velocity Profiling of the USGS Strong Motion Stations on the Island of Hawaii," *Seismological Society of America Annual Meeting*, Santa Fe, NM, April 16-18, 2008. Abstract only (published in *Seismological Research Letters*, 79(2), p. 339).
11. Menq, F.-Y., Stokoe II, K.H., Park, K., Rosenblad, B.L., Cox, B.R. (2008). "Performance of Mobile Hydraulic Shakers at nees@UTexas for Earthquake Studies," The 14th World Conference on Earthquake Engineering, Beijing, China, October 12-17, 2008.
12. Stokoe II, K.H., Li, S., Cox, B.R., Menq, F.-Y., Rohay, A. (2008). "Deep Downhole Seismic Testing for Earthquake Engineering Studies," The 14th World Conference on Earthquake Engineering, Beijing, China, October 12-17, 2008.
13. Meneses, J.F., Franke, K.W., Cox, B.R., Rodriquez-Marek, A., Wartman, J. (2009). "Performance-based Evaluation of a Massive Liquefaction-induced Lateral Spread in a Subduction Zone," IS-Tokyo 2009 - International Conference on Performance-Based Design in Earthquake Geotechnical Engineering - From Case History to Practice, Tokyo, Japan, June 15-17, 2009, pp. 1551-1558.
14. Cox, B.R., McCartney, J.S., Curry, B., Wood, C.M., Young, C. (2009) "In-situ Strain Measurement during Dynamic Shear Loading of An Unbound Geogrid Reinforced Pavement Section," Eighth International Conference on the Bearing Capacity of Roads, Railways, and Airfields, Urbana-Champaign, IL, June 29–July 2, 2009.
15. Cox, B.R., McCartney, J.S., Wood, C.M., Curry, B. (2010). "Performance Evaluation of Full-Scale Geosynthetic-Reinforced Flexible Pavements Using Field Cyclic Plate Load Tests," The Transportation Research Board 89th Annual Meeting, Washington, D.C., January 10-14, 2010.
16. Marinucci, A.M, Rathje, E.M, Ellington, J.S., Cox, B.R., Menq, F.-Y., and Stokoe II, K.H. (2010). "Evaluation of the Effectiveness of Prefabricated Vertical Drains using Full-Scale In Situ Staged Dynamic Testing," Art of Foundation Engineering Practice, Eds. M.H. Hussein, J.B. Anderson, and W.M. Camp, Geotechnical Special Publication 198, ASCE, pp. 380-394.
17. Cox, B.R., Wood, C.M. (2010). "A Comparison of Linear-Array Surface Wave Methods at a Soft Soil Site in the Mississippi Embayment," ASCE GeoFlorida: Advances in Analysis, Modeling and Design, West Palm Beach, FL, February 20-24, 2010, pp. 1369-1378.
18. Wells, D.L., Rathje, E., Bachhuber, J., Cox, B.R., French, J., Green, R., Olson, S., Rix, G., Suncar, O., Pena, L., Mundaray, T. (2010). "Ground Deformation Effects on the 12 January 2010 Earthquake in Haiti," *Seismological Society of America Annual Meeting*, Portland, OR, April 21-23, 2010. Abstract only (published in *Seismological Research Letters*, 81(3), p. 540).

19. Menq, F.-Y., Cox, B.R., Stokoe II, K.H. (2010). "Estimating Dynamic Strain Amplitudes Beneath Mobile Shakers," *Seismological Society of America Annual Meeting*, Portland, OR, April 21-23, 2010. Abstract only (published in *Seismological Research Letters*, 81(2), p. 356).
20. McCartney, J.S., Cox, B.R., Wood, C.M., Curry, B. (2010). "Evaluation of Geosynthetic-Reinforced Flexible Pavements Using Static Plate Load Tests," 9th International Conference on Geosynthetics, Guaruja, Brazil, May 23-27, 2010.
21. Menq, F.-Y., Cox, B.R., Park, K., Stokoe II, K.H. (2010). "Estimating Dynamic Strains in Soil Generated by the Large Mobile Shakers at NEES@UTexas Before Testing," 9th U.S. National and 10th Canadian Conference on Earthquake Engineering: Reaching Beyond Borders, Toronto, Canada, July 25-29, 2010.
22. Cox, B.R., Cothren, J., Barnes, A., Wartman, J., Rodriguez-Marek, A., Meneses, J. (2010). "Towards Quantifying Movement of a Massive Lateral Spread Using High-Resolution Satellite Image Processing," 9th U.S. National and 10th Canadian Conference on Earthquake Engineering: Reaching Beyond Borders, Toronto, Canada, July 25-29, 2010.
23. McCartney, J.S., Cox, B.R., Trowler, C., Wood, C.M., Khosravi, A. (2011). "Seasonal Effects on the Dynamic Deformation of Geosynthetic-Reinforced Pavements," ASCE Geo-Frontiers: Advances in Geotechnical Engineering, Dallas, TX, March 13-16, 2011, pp. 1872-1881.
24. Stokoe II, K.H., Lee, J.-S., Nam, B.-H., Cox, B.R., and Oshinski, E. (2011). "Investigations of Galveston Airport Pavements after Hurricane Ike in 2008 and Liquefaction Sites in Residential Areas after the New Zealand Earthquake in 2010," Proceedings of the 3rd International Conference on Geotechnical Engineering for Disaster Mitigation and Rehabilitation, Semarang, Indonesia, 18-May 18-20, 2011, pp. 255-262.
25. Cox, B.R., Wood, C.M. (2011). "Surface Wave Benchmarking Exercise: Methodologies, Results and Uncertainties," ASCE GeoRisk2011: Risk Assessment and Management in Geoengineering, Atlanta, GA, June 26-28, 2011, pp. 845-852.
26. Kayen, R.E., Ishihara, K., Stewart, J.P., Tokimatsu, K., Cox, B.R., Tanaka, Y., Kokusho, T., Mason, H.B., Moss, R.E.S, Zekkos, D., Wood, C.M., Katsumata, K., Estevez, I.A., Cullenward, S.S., Tanaka, H., Harder, L.F., Kelson, K.I., Kishida, T. (2012). "Geotechnical Deformations at Ground Failure Sites from the March 11, 2011 Great Tohoku Earthquake, Japan: Field Mapping, LIDAR Modeling, and Surface Wave Investigation." Proceedings of the 9th International Conference on Urban Earthquake Engineering/4th Asia Conference on Earthquake Engineering, March 6-8, 2012, Tokyo, Japan. pp. 123-129.
27. Wood, C.M., Cox, B.R. (2012). "A Comparison of MASW Dispersion Uncertainty and Bias for Impact and Harmonic Sources," ASCE Geo-Congress 2012: State of the Art and Practice in Geotechnical Engineering, Oakland, CA, March 25-29, 2012, pp. 2756-2765.
28. Griffiths, S.C., Cox, B.R. (2012). "A Comparison of SPT-Based Empirical Liquefaction Triggering Procedures for Soils at Significant Depths (+20 m)," ASCE Geo-Congress 2012: State of the Art and Practice in Geotechnical Engineering, Oakland, CA, March 25-29, 2012, pp. 1770-1779.
29. Wood, C.M., Cox, B.R., Rodriguez-Marek, A., Assimaki, D., Wartman, J., Pando, M. (2012). "Topographic Effects from Longwall Coal Mining Seismicity: Phase I Experimental Setup and Results," Second International Conference on Performance-Based Design in Earthquake Geotechnical Engineering, Taormina, Italy, May 28-30, 2012, Paper No. 1.06, pp. 51-62.
30. Pando, M., Suarez, L.E., Rodriguez-Marek, A., Dika, S.L., Assimaki, D., Cox, B.R., Wartman, J. (2012). "A Bridge to the Doctoral Program Strategy for Increasing Latinos in the Earthquake Engineering Professoriate", Proceedings of the 2012 American Society of Engineering Education Conference, San Antonio, TX, June 10-13, 2012.
31. Wotherspoon, L.M., Orense, R.P., Bradley, B.A., Cox, B.R., Wood, C.M., Green, R.A. (2013). "Soil Profile Characterisation of Christchurch Strong Motion Stations", New Zealand Society for Earthquake Engineering 2013 Conference: Same Risks – New Realities, Wellington, New Zealand, April 26-28, 2013.
32. Wood, C.M., Ellis, T.B., Teague, D.P., Cox, B.R. (2014). "Comprehensive Analysis of the UTexas1 Surface Wave Dataset," ASCE Geo-Congress 2014: Geo-Characterization and Modeling for Sustainability, Atlanta, GA, February 23-26, 2014, pp. 820-829.

33. Cox, B.R., Wood, C.M., Teague, D.P. (2014). "Synthesis of the UTexas1 Surface Wave Dataset Blind-Analysis Study: Inter-Analyst Dispersion and Shear Wave Velocity Uncertainty," ASCE Geo-Congress 2014: Geo-Characterization and Modeling for Sustainability, Atlanta, GA, February 23-26, 2014, pp. 850-859.

C. Other Major Publications

D. Books, Chapters of Books; Editor of Books

E. Reviews

F. Technical Reports

1. Rodriguez-Marek, A., Alva-Hurtado, J., Cox, B.R., Meneses, J., Moreno, V., Olcese, M., Sancio, R., Wartman, J. (2007). "Preliminary Reconnaissance Report on the Geotechnical Engineering Aspects of the August 15, 2007 Pisco, Peru Earthquake: Report of the National Science Foundation-Sponsored Geo-Engineering Earthquake Reconnaissance (GEER) Team", Internet Report (http://gees.usc.edu/GEER/Peru2007/Peru2007_WebPage/index.htm), September 2007.
2. Kayen, R., Cox, B.R., Johansson, J., Steele, C., Somerville, P., Kongai, K., Zhao, Y., Tanaka, H. (2008). "Geoengineering and Seismological Aspects of the Iwate Miyagi-Nairiku, Japan Earthquake of June 14, 2008", Internet Report (http://research.eerc.berkeley.edu/projects/GEER/GEER_Post%20EQ%20Reports/Japan_2008/Cover_Japan2008.html), September 2008.
3. Rathje, E.M., Bachhuber, J., Cox, B.R., French, J., Green, R., Olson, S., Rix, G., Wells, D., Suncar, O. (2010). "Geotechnical Engineering Reconnaissance of the 2010 Haiti Earthquake", Internet Report (http://www.geerassociation.org/GEER_Post%20EQ%20Reports/Haiti_2010/CoverHaiti10.html), February 2010.
4. Green, R.A., Cubrinovski, M., Allen, J., Ashford, S., Bowman, E., Bradley, B., Cox, B.R., Hutchinson, T., Kavazanjian, E., Orense, R., O'Rourke, T., Pender, M., Quigley, M., Wotherspoon, L. (2010). "Geotechnical Reconnaissance of the 2010 Darfield (New Zealand) Earthqauke", Internet Report (http://www.geerassociation.org/GEER_Post%20EQ%20Reports/Darfield%20New%20Zealand_2010/Cover_Darfield_2010.html), November 2010.

ORAL PRESENTATIONS:

A. National/International Meetings or Conferences

1. Cox, B.R. (Invited) "Development of a Direct Test Method for Dynamically Assessing the Liquefaction Resistance of Soils In-Situ" presented at the Earthquake Engineering Research Institute Annual Meeting, Los Angeles, CA, February 10, 2007.
2. Cox, B.R. (Invited) "Surface Wave Site Characterization" presented at the Pile Driving Contractors Association (PDCA) Professors' Driven Pile Institute, Logan, UT, June 17, 2009.
3. Cox, B.R. (Invited) "Turning Disaster into Knowledge: The M8.0 Pisco Peru Earthquake of August 15, 2007" presented at the NSF-Sponsored Geo-Engineering Extreme Events Reconnaissance (GEER) Workshop, Berkeley, CA, May 18, 2009.
4. Cox, B.R. "A Comparison of Linear-Array Surface Wave Methods at a Soft Soil Site in the Mississippi Embayment" presented at ASCE Geo Florida, West Palm Beach, FL, February 22, 2010.
5. Cox, B.R. (Invited) "The M8.0 Pisco, Peru Earthquake of August 15, 2007" presented at Fifth International Conference on Recent Advances in Geotechnical Earthquake Engineering and Soil Dynamics, San Diego, CA, May 28, 2010.
6. Cox, B.R. "Towards Quantifying Movement of a Massive Lateral Spread Using High-Resolution Satellite Image Processing" presented at 9th US National and 10th Canadian Conference on Earthquake Engineering: Reaching Beyond Borders, Toronto, Canada, July 27, 2010.

7. Cox, B.R. (Invited) "Structural Health Monitoring: Ideas for China-U.S. Collaboration" presented at the NSF-Sponsored Workshop on China-US Collaboration for Disaster Evolution/Resilience of Civil Infrastructure and Urban Environment, Purdue University, West Lafayette, IN, August 23-24, 2010.
8. Cox, B.R. "In-Situ Measurements of Pore Pressure Generation and Nonlinear Shear Modulus Behavior at the Wildlife Liquefaction Array" presented at the 24th Symposium on the Application of Geophysics to Engineering and Environmental Problems, Charleston, SC, April 10-14, 2011.
9. Cox, B.R. "A comparison of SPT-Based Empirical Liquefaction Triggering Procedures for Soils at Significant Depths (+20 m)" presented at the ASCE GeoCongress 2012: State of the Art and Practice in Geotechnical Engineering, Oakland, CA, March 27, 2012.
10. Cox, B.R. (Invited) "Geotechnical Lessons Learned from the M7.0 2010 Haiti Earthquake: Why the Palace Fell" presented at the Earthquake Engineering Research Institute Annual Meeting and National Earthquake Conference, Memphis, TN, April 11, 2012.
11. Cox, B.R. (Invited) "Liquefaction Lessons Learned from Recent Post-Earthquake Reconnaissance" presented at the Liquefaction State-of-the-Art Forum: Consequences & Mitigation, St. Louis, MO, April 19, 2012.
12. Cox, B.R. "Topographic Effects from Longwall Coal Mining Seismicity: Phase I Experimental Setup and Results" presented at the Second International Conference on Performance-Based Design in Earthquake Geotechnical Engineering, Taormina, Italy, May 28-30, 2012.
13. Cox, B.R. (Invited) "Liquefaction at Strong Motion Stations and in Urayasu City During the 2011 Great East Japan Earthquake," presented at the Pacific Earthquake Engineering Research Center (PEER) TSRP Liquefaction Workshop, Berkeley, CA, April 24, 2013.
14. Cox, B.R. "Deep Vs Profiling for Dynamic Characterization of Christchurch, New Zealand: Towards Reliably Merging Large Active-Source and Ambient-Wavefield Surface Wave Methods," presented at the International Conference on Earthquake Geotechnical Engineering: From Case History to Practice - in honour of Professor Kenji Ishihara, Istanbul, Turkey, June 17-19, 2013.
15. Cox, B.R. "Deep Vs Profiling for Dynamic Characterization of Christchurch, New Zealand: Towards Reliably Merging Large Active-Source and Ambient-Wavefield Surface Wave Methods," presented at Quake Summit 2013 – NEES Annual Meeting, Reno, NV, August 8, 2013.
16. Cox, B.R. "Synthesis of the UTexas1 Surface Wave Dataset Blind-Analysis Study: Inter-Analyst Dispersion and Shear Wave Velocity Uncertainty," presented at ASCE Geo-Congress 2014: Geo-Characterization and Modeling for Sustainability, Atlanta, GA, February 23-26, 2014.
17. Cox, B.R. (Invited) "Analysis of the InterPacific Surface Wave Datasets: Significant Results and Conclusions," presented at the 1st INTERPACIFIC Workshop, Torino, Italy, 22-23 May, 2014.
18. Cox, B.R. (Invited) "Analysis of the InterPacific Borehole Methods Datasets: Relevant Results and Conclusions," presented at the 1st INTERPACIFIC Workshop, Torino, Italy, 22-23 May, 2014.
19. Cox, B.R. "Developing Reliable Deep Vs Profiles Beneath Christchurch by Merging Large Active-Source and Ambient-Wavefield Surface Wave Methods," presented at the 10th U.S. National Conference on Earthquake Engineering, Anchorage, AK, 21-25 July, 2014.
20. Cox, B.R. (Invited) "NEES Helping to Build a Resilient Christchurch: Towards Deep Basin Characterization and Liquefaction Mitigation," presented at the 10th U.S. National Conference on Earthquake Engineering NEES Luncheon, Anchorage, AK, 21-25 July, 2014.

B. Regional/State/Local Meetings or Conferences

1. Cox, B.R. (Invited) "What Will Happen in Northwest Arkansas When the 'Big One' Hits New Madrid" presented at the Northwest Arkansas Section Meeting of ASCE, Fayetteville, AR, November 1, 2006.
2. Cox, B.R. (Invited) "Geotechnical Earthquake Engineering: What it is and Why Arkansas Should Care" presented at the Arkansas Academy of Civil Engineers meeting, Fayetteville, AR, April 13, 2007.
3. Cox, B.R. (Invited) "Earthquake Issues of Special Interest in Arkansas: Soil Liquefaction and Deep/Soft Soil Amplification of Earthquake Ground Motions" presented at the ATC-20 Post earthquake Safety Evaluation of Buildings seminar, Fayetteville, AR, October 19, 2007.

4. Cox, B.R. (Invited) "Development of a Direct Test Method for Dynamically Assessing the Liquefaction Resistance of Soils In Situ" presented at the Arkansas Academy of Civil Engineers meeting, Fayetteville, AR, April 11, 2008.
5. Cox, B.R. (Invited) "Practical Lessons Learned from Recent Large Earthquakes and How They Apply to Arkansas" presented at the Arkansas Governor's Earthquake Advisory Council (AGEAC) meeting, Jonesboro, AR, July 25, 2008.
6. Cox, B.R. (Invited) "Geotechnical Failures Observed in the Recent Pisco, Peru and Iwate-Miyagi Earthquakes" presented at the Arkansas Division of Emergency Management (ADEM) Fall Conference, Fort Smith, AR, August 29, 2008.
7. Cox, B.R. (Invited) "Geotechnical Failures Observed in the Recent Pisco, Peru and Iwate-Miyagi Earthquakes" presented at the ASCE Arkansas State Section Annual Meeting and Conference, Little Rock, AR, September 5, 2008.
8. Cox, B.R. (Invited) "Earthquake Issues of Special Interest in Arkansas" presented at the ATC-20 Post earthquake Safety Evaluation of Buildings seminar, Fayetteville, AR, November 7, 2008.
9. Cox, B.R. (Invited) "Evaluation of Basal Reinforcement of Flexible Pavements" Arkansas State Highway and Transportation Department, Transportation Research Committee, Little Rock, AR, May 5, 2009.
10. Cox, B.R. (Invited) "Transportation Infrastructure Damage from Recent Earthquakes" Arkansas State Highway and Transportation Department, Transportation Research Committee, Little Rock, AR, May 5, 2009.
11. Cox, B.R. (Invited) "Soil Liquefaction and Its Engineering Effects" presented at the Arkansas Governor's Earthquake Advisory Council (AGEAC) meeting, Blytheville, AR, July 23, 2009.
12. Cox, B.R. (Invited) "Earthquakes and Their Engineering Effects" presented at Oakdale Middle School, Rogers, AR, October 9, 2009.
13. Cox, B.R. (Invited) "Accelerated Characterization of Full-Scale Reinforced Flexible Pavement Models Using a Vibroseis" presented at the Mack Blackwell Rural Transportation Center (MBTC) Annual Advisory Board meeting, Fayetteville, AR, October 20, 2009.
14. Cox, B.R. (Invited) "Earthquakes and Their Engineering Effects" presented at the University of Arkansas Engineering and Science Partnership mini-workshop, Fayetteville, AR, October 24, 2009.
15. Cox, B.R. (Invited) "Evaluation of Basal Reinforcement of Flexible Pavements II" presented at the Arkansas State Highway and Transportation Department (AHTD), Transportation Research Committee, Little Rock, AR, November 17, 2009.
16. Cox, B.R. (Invited) "Accelerated Characterization of Full-Scale Reinforced Flexible Pavement Models Using a Vibroseis" presented at the Arkansas State Highway and Transportation Department (AHTD), Transportation Research Committee, Little Rock, AR, November 17, 2009.
17. Cox, B.R. (Invited) "Earthquakes and Their Engineering Effects" presented at the ATC-20 Post earthquake Safety Evaluation of Buildings seminar, Fayetteville, AR, November 20, 2009.
18. Cox, B.R. (Invited) "Earthquakes and Their Engineering Effects" presented at Central Jr. High School, Springdale, AR, December 4, 2009.
19. Cox, B.R. (Invited) "Geotechnical Earthquake Engineering Reconnaissance" presented at the University of Arkansas College of Engineering Spring 2010 Advisory Council, Fayetteville, AR, April 9, 2010.
20. Cox, B.R. (Invited) "2010 Haiti Earthquake from Reconnaissance to Rebuilding" presented at the Arkansas State Highway and Transportation Department (AHTD), Transportation Research Committee, Little Rock, AR, May 12, 2010.
21. Cox, B.R. (Invited) "2010 Haiti Earthquake: from Reconnaissance to Rebuilding" presented at the University of Arkansas Geosciences Colloquium, Fayetteville, AR, September 3, 2010.
22. Cox, B.R. (Invited) "Geotechnical Earthquake Engineering Reconnaissance" presented at the University of Arkansas Board of Advisors Meeting, Fayetteville, AR, September 24, 2010.
23. Cox, B.R. (Invited) "Earthquakes and Their Engineering Effects" presented at Lynch Middle School, Farmington, AR, January 27, 2011.

24. Cox, B.R. (Invited) "Evaluation of Basal Reinforcement of Flexible Pavements (the Marked Tree project)" presented at the Arkansas State Highway and Transportation Department (AHTD), Transportation Research Committee, Little Rock, AR, April 26, 2011.
25. Cox, B.R. (Invited) "Why the Palace Fell - The 2010 Haiti Earthquake: from Reconnaissance to Reconstruction" presented at the Freshman Engineering Program, The University of Arkansas, Fayetteville, AR, September 20, 2011.
26. Cox, B.R. (Invited) "Earthquake Engineering Reconnaissance: Turning Disaster into Knowledge" presented at the College of Engineering Alumni and Friends Luncheon, Clinton Library, Little Rock, AR, November 8, 2011.
27. Cox, B.R. (Invited) "Earthquakes and Their Engineering Effects" presented at Oakdale Middle School, Rogers, AR, November 18, 2011.
28. Cox, B.R. (Invited) "Earthquakes and Their Engineering Effects" presented at the ATC-20 Post earthquake Safety Evaluation of Buildings seminar, Fayetteville, AR, December 2, 2011.
29. Cox, B.R. (Invited) "Earthquakes and Their Engineering Effects" presented at Central Jr. High School, Springdale, AR, December 9, 2011.
30. Cox, B.R. (Invited) "Lessons Learned from Recent Global Earthquakes" presented at the Arkansas Governor's Earthquake Advisory Council, Jonesboro, AR, January 19, 2012.
31. Cox, B.R. (Invited) "Earthquakes and Their Engineering Effects" presented at St. Joseph Catholic School, Fayetteville, AR, January 27, 2012.
32. Cox, B.R. (Invited) "Liquefaction Lessons Learned from Recent Post-Earthquake Reconnaissance" presented at the UT Austin EERI Student Chapter Seminar, Austin, TX, October 24, 2012.
33. Cox, B.R. (Invited) "Lessons Learned from Recent Geotechnical Earthquake Reconnaissance" presented at the UT Austin CAEE External Advisory Committee Meeting, Austin, TX, November 2, 2012.
34. Cox, B.R. (Invited) "Topographic Effects in Earthquake Ground Motions: Insights Gained from Field Studies of Frequent and Predictable Mining Seismicity" presented at the UT Austin Acoustics Seminar, Austin, TX, November 9, 2012.
35. Cox, B.R. (Invited) "Why the Palace Fell - The 2010 Haiti Earthquake: from Reconnaissance to Reconstruction" presented at St. Stephen's Episcopal School, Austin, TX, February 13, 2014.
36. Cox, B.R. (Invited) "Deep Vs Profiling for Dynamic Characterization of Christchurch, New Zealand: Towards Reliably Merging Large Active-Source and Ambient-Wavefield Surface Wave Methods," presented at the University of Texas Institute for Geophysics Seminar, Austin, TX, March 28, 2014.
37. Cox, B.R. (Invited) "My Experiences as an Earthquake Engineer," presented at Elsa England Elementary School, Round Rock, TX, March 21, 2014.

PATENTS: None

GRANTS AND CONTRACTS:

Co-Investigators	Title	Agency	Grant Total	Candidate Share	Grant Period
N. Hall (PI), N. Sun	Early Career: Development of Meso-Scale, Capacitively-Transduced Seismic Sensors for Earth Sciences	The National Science Foundation (NSF)	599,359	193,000	Submitted
K. H. Stokoe, (PI)	Field Investigations of Shallow Ground Improvement Methods for Inhibiting Liquefaction Triggering; Christchurch, New Zealand	The National Science Foundation (NSF)	197,966	98,983	June 2013 - May 2014

K. H. Stokoe, (PI)	Field Investigations of Shallow Ground Improvement Methods for Inhibiting Liquefaction Triggering; Christchurch, New Zealand	Tonkin and Taylor Ltd.	223,518	111,759	June 2013 - May 2014
None	RAPID: Deep Shear Wave Velocity Profiling for Seismic Characterization of Christchurch, NZ - Reliably Merging Large Active-Source and Passive-Wavefield Surface Wave Methods	The National Science Foundation (NSF)	197,684	197,684	Dec. 2012 - Nov. 2013
None	CAREER/PECASE: Revolutionizing Surface Wave Methods for Engineering Analyses - from Deterministic and Incoherent to Probabilistic and Standardized (DIPS)	The National Science Foundation (NSF)	421,600	421,600	July 2011 – June 2016
None	Site-Specific Seismic Ground Motion Analyses for Transportation Infrastructure in the New Madrid Seismic Zone	USDOT Mack-Blackwell Rural Transportation Center (MBTC) and Arkansas State Highway and Transportation Department (AHTD)	88,592	88,592	July 2011 – June 2012
None	RAPID: CPT and SASW Testing at Seismograph Stations with Liquefiable Soils Affected by the Tohoku Earthquake, Japan	The National Science Foundation (NSF)	120,253	120,253	July 2011 – Dec. 2012
E. Rathje (PI), J. Bachhuber	Development of a Geologic and Geotechnical Database of Port-au-Prince Metropolitan Area for use in Seismic Microzonation Studies	United Nations Development Programme (UNDP)	50,000	16,667	Nov. 2010 – June 2011
S. Olson (PI)	RAPID: Geotechnical-Driven Damage Patterns and Liquefaction in the January 2010 Haiti Earthquake	The National Science Foundation (NSF)	40,000	20,000	May 2010 – April 2011

A. Rodriguez-Marek (PI), D. Assimaki, M. Pando, W. Silva, J. Wartman	NEES-CR: Topographic Effects in Strong Ground Motion - From Physical and Numerical Modeling to Design	The National Science Foundation (NSF)	1,144,593	211,857	Oct. 2009 – Sept. 2013
J. Cothren, A. Rodriguez-Marek, J. Wartman	Collaborative Research: The M8.0 Pisco Peru Earthquake – A Benchmark Ground Failure Event for Remote Sensing and Data Archiving	The National Science Foundation (NSF)	325,178	177,065	Aug. 2009 – Jan. 2011
None	Practical Recommendations for Evaluation and Mitigation of Soil Liquefaction in Arkansas	USDOT Mack-Blackwell Rural Transportation Center (MBTC) and Arkansas State Highway and Transportation Department (AHTD)	79,524	79,524	July 2009 – Dec. 2010
K. Hazirbaba (PI)	Utilization of Screw Piles in High Seismicity Areas of Cold and Warm Permafrost	Alaska University Transportation Center (AUTC)	190,424	33,242	July 2009 – June 2011
K. Grimmelsman (PI), E. Heymsfield	Structural Health Monitoring and Assessment of Critical Intermodal Transportation Infrastructure Elements	U.S. Department of Homeland Security (DHS)	225,000	75,000	Jan. 2009 – June 2011
N. Dennis (PI), J. McCartney	Resistance Factors for Pile Foundations	Arkansas State Highway and Transportation Department (AHTD)	105,817	35,272	Jan. 2009 – June 2010
J. McCartney	Evaluation of Basal Reinforcement of Flexible Pavements with Geosynthetics	Arkansas State Highway and Transportation Department (AHTD)	263,459	175,639	July 2008 – June 2011

J. McCartney	Accelerated Characterization of Full-Scale Reinforced Flexible Pavement Models using a Vibroseis	USDOT Mack-Blackwell Rural Transportation Center (MBTC) and Arkansas State Highway and Transportation Department (AHTD)	84,069	56,046	July 2008 – Dec. 2009
		Total	3,757,677	1,919,183	

PH.D. SUPERVISIONS COMPLETED:

Clinton M. Wood, "Field Investigation of Topographic Effects using Mine Seismicity," Department of Civil, Architectural and Environmental Engineering, University of Texas at Austin, August 2013. – Placed as Tenure Track Assistant Professor, University of Arkansas.

M.S. SUPERVISIONS COMPLETED:

Andrew N. Beekman, "A Comparison of Experimental ReMi Measurements with Various Source, Array and Site Conditions," Department of Civil Engineering, University of Arkansas, August 2008. (thesis)

Clinton M. Wood, "The Impact of Source Type, Source Offset and Receiver Spacing on Experimental MASW Data at Soft-over-Stiff Sites," Department of Civil Engineering, University of Arkansas, May 2009. (thesis)

Jeremy A. Brooks, "Strain Gage Installation and Survivability on Geosynthetics Used in Flexible Pavements," Department of Civil Engineering, University of Arkansas, December 2009. (thesis)

Christina N. Trowler, "Accelerated Characterization of Full-scale Reinforced Flexible Pavement Models Using a Vibroseis," Department of Civil Engineering, University of Arkansas, May 2010. (thesis)

Shawn C. Griffiths, "Practical Recommendations for Evaluation and Mitigation of Deep Soil Liquefaction," Department of Civil Engineering, University of Arkansas, May 2011. (thesis)

Taylor Goldman, "The Marked Tree Site: Evaluation of Basal Reinforcement of Flexible Pavements with Geosynthetics," Department of Civil Engineering, University of Arkansas, December 2011. (thesis)

David Teague, "Reliably Merging Large Active-Source and Passive-Wavefield Surface Wave Methods," Department of Civil, Architectural and Environmental Engineering, University of Texas at Austin, May 2014. (no thesis)

PH.D. IN PROGRESS:

A. Students admitted to candidacy

Shawn C. Griffiths, "Mapping Uncertainty in Shear Wave Velocity Derived from Surface Wave Methods to Uncertainty in Site Response Estimates," Department of Civil, Architectural and Environmental Engineering, University of Texas at Austin.

Trenton Ellis, "Revolutionizing Surface Wave Methods for Engineering Analyses – from Deterministic and Incoherent to Probabilistic and Standardized," Department of Civil, Architectural and Environmental Engineering, University of Texas at Austin.

Andrew Stolte, "Strengths and Weaknesses of Psueduo-2D Subsurface Imaging Using Surface Wave Methods," Department of Civil, Architectural and Environmental Engineering, University of Texas at Austin.

B. Post M.S. students preparing to take Ph.D. qualifying exam

David Teague, "Stress Wave Subsurface Imaging for Anomaly Detection," Department of Civil, Architectural and Environmental Engineering, University of Texas at Austin.

M.S. IN PROGRESS:

None currently

VITA:

Dr. Cox specializes in geotechnical engineering issues related to earthquake loading, soil dynamics and nondestructive material characterization using stress waves. He joined the Cockrell School of Engineering at the University of Texas in 2012, after having served for six years as a Civil Engineering faculty member at the University of Arkansas. He has been a part of Geotechnical Extreme Events Reconnaissance (GEER) teams deployed immediately following the M7.1 2010 Darfield, New Zealand Earthquake, the M7.0 2010 Haiti Earthquake, the M6.9 2008 Iwate-Miyagi, Japan Earthquake and the M8.0 2007 Pisco, Peru Earthquake. He has also been a part of teams deployed to collect shear wave velocity data at strong motion stations and soil liquefaction sites following the 2011 Tohoku, Japan Earthquake, the 2011 Christchurch, New Zealand Earthquake, the 2006 Kiholo Bay, Hawaii Earthquake, the 2001 Nisqually (Seattle), Washington Earthquake, and the 1999 Kocaeli, Turkey Earthquake. Additionally, Dr. Cox has participated in numerous dynamic site characterization projects where crosshole, downhole and surface wave techniques were employed for the seismic design of critical government facilities such as the Yucca Mountain Project, the Device Assembly Facility (Nevada Test Site), the DOE Hanford Site, the Y-12 National Security Complex, Oak Ridge National Laboratory, and Los Alamos National Laboratory.

In 2012-2011, Dr. Cox received the prestigious Presidential Early Career Award for Scientists and Engineers (PECASE) and the Faculty Early Career Development (CAREER) award from the National Science Foundation for his work on quantifying uncertainty in surface wave methods used for non-intrusive geotechnical site investigations. His Ph.D. graduate research at the University of Texas centered around the development of a new in-situ test method for directly measuring the dynamic pore pressure response and nonlinear shear modulus behavior of liquefiable soil deposits. For this research, he was selected as the 2004-2005 FEMA Graduate Fellow in Earthquake Hazard Reduction by the Earthquake Engineering Research Institute (EERI). In 2010, his continued work in this area was recognized by the ASTM Geotechnical Testing Journal through receipt of the Hogentogler Award for his "paper of outstanding merit." He is a member of the American Society of Civil Engineers (ASCE), GEER and EERI.

Co-Authored Works

A listing of all co-authored, peer-reviewed journal and conference publications *over the past four years* (i.e., since 2010) is provided below. For each publication, I have indicated the contribution I made to the intellectual content and production of the paper using a three-level scale: **primary**, **significant** and **supportive**. Additionally, *at least the first four co-authors are identified*, at the time of publication, as current students, former students, faculty colleagues, etc. Note that the publication serial numbers match those from my CV and that underlined names indicate either myself or my current and former graduate students.

A. Refereed Archival Journal Publications

5. Cubrinovski, M., Green, R.A., Allen, J., Ashford, S., Bowman, E., Bradley, B., Cox, B.R., Hutchinson, T., Kavazanjian, E., Orense, R., Pender, M., Quigley, M., Wotherspoon, L. (2010). "Geotechnical Reconnaissance of the 2010 Darfield (Canterbury) Earthquake," *Bulletin of the New Zealand Society for Earthquake Engineering*, 43(4), pp. 243-320.

   Co-authors: Cubrinovski, Bowman, Bradley and Quigley are faculty members at the University of Canterbury. Orense, Pender and Wotherspoon are faculty members at the University of Auckland. Green is a faculty member at Virginia Tech. Allen is a consulting engineer. Ashford is a faculty member at Oregon State University. Cox is a faculty member at the University of Arkansas. Hutchinson is faculty member at UC San Diego. Kavazanjian is a faculty member at Arizona State University.

   Division of labor: This publication resulted from the efforts of a GEER reconnaissance team deployed to document the geotechnical aspects of the 2010 Darfield, New Zealand Earthquake. Authors Cubrinovski and Green led the team and directed other team members in their assignments to produce the paper. I consider them as primarily responsible for the production of the paper. All other authors are listed in alphabetical order. I made **significant** contributions to this paper in terms of both intellectual content and production by collecting and interpreting surface wave data at liquefaction case history sites and by writing significant portions of the paper and reviewing the rest.

6. Wong, I.G., Stokoe II, K.H., Cox, B.R., Lin, Y-C., Menq, F.-Y. (2011). "Shear-Wave Velocity Profiling of Strong Motion Sites That Recorded the 2001 Nisqually, Washington Earthquake," *Earthquake Spectra*, 27(1), pp. 183-212.

   Co-authors: Wong works for URS Corporation. Stokoe is faculty member and Lin and Menq are postdocs at the University of Texas. Cox is a faculty member at the University of Arkansas.

   Division of labor: I made **significant** contributions to this paper in terms of intellectual content by participating in a two-week field campaign to collect experimental data in Washington. I also made **significant** contributions in terms of production, while Wong and Stokoe primarily led production and also made primary contributions in terms of intellectual content.

7. Cox, B.R., Beekman, A.N. (2011). "Intramethod Variability in ReMi Dispersion and V_s Estimates at Shallow Bedrock Sites," *Journal of Geotechnical and Geoenvironmental Engineering,* 137(4), pp. 354-362.

   Co-authors: Cox is a faculty member at the University of Arkansas and Beekman is one of his graduate students.

Division of labor: I made **primary** contributions to this paper in terms of both intellectual content and production.

8. Yong, A., Hough, S.E., Cox, B.R., Rathje, E.M., Bachhuber, J., Dulberg, R., Hulslander, D., Christiansen, L., Abrams, M.J. (2011). "Seismic-zonation of Port-au-Prince Using Pixel- and Object-based Imaging Analysis Methods on ASTER GDEM," *Journal of Photogrammetric and Remote Sensing*, 77(9), pp. 909-921.

   Co-authors: Yong and Hough are research scientists at the USGS. Cox is a faculty member at the University of Arkansas. Rathje is a faculty member at the University of Texas. Bachhuber and Dulberg work for Fugro consultants. Hulslander is a researcher at ITT-VIS. Christiansen and Abrams are research scientists at Cal-Tech.

   Division of labor: I made **significant** contributions to this paper in terms of intellectual content and production. Yong was primarily responsible for intellectual content and production.

9. Olson, S.M., Green, R.A., Lasley, S., Martin, N., Cox, B.R., Rathje, E., Bachhuber, J., and French, J. (2011). "Documenting Liquefaction and Lateral Spreading Triggered by the 12 January 2010 Haiti Earthquake," *Earthquake Spectra*, 27(S1), pp. S93-S116.

   Co-authors: Olson is a faculty member at the University of Illinois and Martin is one of his graduate students. Green is a faculty member at Virginia Tech and Lasley is one of his graduate students. Cox is a faculty member at the University of Arkansas. Rathje is a faculty member at the University of Texas. Bachhuber works for Fugro consultants. French works for AMEC consultants.

   Division of labor: This publication resulted from the efforts of a GEER reconnaissance team deployed to document the geotechnical aspects of the 2010 Haiti Earthquake, and a subsequently funded NSF RAPID proposal awarded to Olson (PI) and Cox (Co-PI) for follow-up research. Authors Olson and Green are primarily responsible for the intellectual content and production of the paper. I made **significant** contributions to this paper in terms of intellectual content by collecting and interpreting surface wave data at liquefaction case history sites, and **supportive** contributions in terms of production by editing the text and creating figures. Ultimately, I spent two weeks in the field and countless hours analyzing data for this paper, and other papers, documenting the effects of the Haiti Earthquake.

10. Green, R.A., Olson, S.M., Cox, B.R., Rix, G.J., Rathje, E., Bachhuber, J., French, J., Lasley, S., and Martin, N. (2011). "Geotechnical Aspects of Failures at Port-au-Prince Seaport during the 12 January 2010 Haiti Earthquake," *Earthquake Spectra*, 27(S1), pp. S43-S65.

    Co-authors: Green is a faculty member at Virginia Tech and Lasley is one of his graduate students. Olson is a faculty member at the University of Illinois and Martin is one of his graduate students. Cox is a faculty member at the University of Arkansas. Rix is a faculty member at Georgia Tech. Rathje is a faculty member at the University of Texas. Bachhuber works for Fugro consultants. French works for AMEC consultants.

    Division of labor: This publication resulted from the efforts of a GEER reconnaissance team deployed to document the geotechnical aspects of the 2010 Haiti Earthquake, and a subsequently funded NSF RAPID proposal awarded to Olson (PI) and Cox (Co-PI) for follow-up research. Authors Green and Olson are primarily responsible for the intellectual content and production of the paper. I made

significant contributions to this paper in terms of intellectual content by collecting and interpreting surface wave data at liquefaction case history sites, and **supportive** contributions in terms of production by editing the text and creating figures. Ultimately, I spent two weeks in the field and countless hours analyzing data for this paper, and other papers, documenting the effects of the Haiti Earthquake.

11. Rathje, E.M., Bachhuber, J., Dulberg, R., Cox, B.R., Kottke, A., Wood, C., Green, R.A., Olson, S., Wells, D., Rix, G. (2011). "Damage Patterns in Port-au-Prince during the 2010 Haiti Earthquake," *Earthquake Spectra*, 27(S1), pp. S117-S136.

    Co-authors: Rathje is a faculty member at the University of Texas and Kottke is one of her graduate students. Bachhuber and Dulberg work for Fugro consultants. Cox is a faculty member at the University of Arkansas and Wood is one of his graduate students. Green is a faculty member at Virginia Tech. Olson is a faculty member at the University of Illinois. Wells works for AMEC consultants. Rix is a faculty member at Georgia Tech.

    Division of labor: This publication resulted from the efforts of a GEER reconnaissance team deployed to document the geotechnical aspects of the 2010 Haiti Earthquake, and a subsequently funded NSF RAPID proposal awarded to Olson (PI) and Cox (Co-PI) for follow-up research. Authors Rathje and Bachhuber are primarily responsible for the intellectual content and production of the paper. I made **significant** contributions to the intellectual content of this paper by collecting and interpreting surface wave data at sites with suspected topographic amplification, and **supportive** contributions in terms of production by editing the text and creating figures. Ultimately, I spent two weeks in the field and countless hours analyzing data for this paper, and other papers, documenting the effects of the Haiti Earthquake

12. Cox, B.R., Bachhuber, J., Rathje, E., Wood, C.M., Dulberg, R., Kottke, A., Green, R.A., Olson, S.M. (2011). "Shear Wave Velocity- and Geology-Based Seismic Microzonation of Port-au-Prince, Haiti," *Earthquake Spectra*, 27(S1), pp. S67-S92.

    Co-authors: Cox is a faculty member at the University of Arkansas and Wood is one of his graduate students. Bachhuber and Dulberg work for Fugro consultants. Rathje is a faculty member at the University of Texas and Kottke is one of her graduate students. Green is a faculty member at Virginia Tech. Olson is a faculty member at the University of Illinois.

    Division of labor: This publication resulted from the efforts of a GEER reconnaissance team deployed to document the geotechnical aspects of the 2010 Haiti Earthquake, and a subsequently funded NSF RAPID proposal awarded to Olson (PI) and Cox (Co-PI) for follow-up research. I made **primary** contributions to the intellectual content of this paper by collecting and interpreting surface wave data at 35 sites throughout Port-au-Prince (PaP), and **primary** contributions in terms of production by developing the text and creating figures. I was assisted in these efforts by Wood. Bachhuber also made primary intellectual contributions by developing the new geologic map of (PaP), and significant production contributions by developing sections of the text and creating figures. Rathje also made supportive contributions in terms of intellectual content and production of the paper. Ultimately, I spent two weeks in the field and countless hours analyzing data for this paper, and other papers, documenting the effects of the Haiti Earthquake

13. Green, R.A., Allen, J., Wotherspoon, L., Cubrinovski, M., Bradley, B., Bradshaw, A., Cox, B.R., and Algie, T. (2011). "Performance of Levees (Stopbanks) during the 4 September

2010 M_w7.1 Darfield and 22 February 2011 M_w6.2 Christchurch, New Zealand Earthquakes," *Seismological Research Letters*, 82(6), pp. 939-949.

Co-authors: Green is a faculty member at Virginia Tech. Allen is a consulting engineer. Wotherspoon is a faculty member at the University of Auckland and Algie is one of his graduate students. Cubrinovski and Bradley are faculty members at the University of Canterbury. Bradshaw is a faculty member at the University of Rhode Island. Cox is a faculty member at the University of Arkansas.

Division of labor: This publication resulted from the efforts of GEER reconnaissance teams deployed to document the geotechnical aspects of the 2010 Darfield, New Zealand Earthquake and the 2011 Christchurch, New Zealand Earthquake. Authors Green, Allen and Wotherspoon are primarily responsible for the intellectual content and production of the paper. I made **supportive** contributions to this paper in terms of intellectual content by making field observations of levee performance following the Darfield earthquake, and **supportive** contributions to production by reviewing the text. Others filled supportive roles.

14. Green, R.A., Wood, C., Cox, B.R., Cubrinovski, M., Wotherspoon, L., Bradley, B., Algie, T., Allen, J., Bradshaw, A., and Rix, G. (2011). "Use of DCP and SASW Tests to Evaluate Liquefaction Potential: Predictions vs. Observations during the Recent New Zealand Earthquakes," *Seismological Research Letters*, 82(6), pp. 927-938.

Co-authors: Green is a faculty member at Virginia Tech. Cox is a faculty member at University of Arkansas and Wood is one of his graduate students. Cubrinovski and Bradley are faculty members at the University of Canterbury. Wotherspoon is a faculty member at the University of Auckland and Algie is one of his graduate students. Allen is a consulting engineer. Bradshaw is a faculty member at the University of Rhode Island. Rix is a faculty member at Georgia Tech.

Division of labor: This publication resulted from the efforts of GEER reconnaissance teams deployed to document the geotechnical aspects of the 2010 Darfield, New Zealand Earthquake and the 2011 Christchurch, New Zealand Earthquake. Authors Green, Wood and Cox are **primarily** responsible for the intellectual content and production of the paper. Wood and Cox analyzed all the surface wave data collected at liquefaction sites following each earthquake, accounting for several weeks of field testing and many more weeks of analysis. Wotherspoon and Cubrinovski also made significant intellectual and production contributions to the paper. Others filled supportive roles.

15. Wong, I.G., Stokoe II, K.H., Cox, B.R., Yuan, J., Knudsen, K.L., Terra, F., Okubo, P., Lin, Y-C. (2011). "Shear-Wave Velocity Characterization of the USGS Hawaiian Strong Motion Network on the Island of Hawaii and Development of a NEHRP Site Class Map," *Bulletin of the Seismological Society of America*, 101(5), pp. 2252-2269.

Co-authors: Wong, Knudsen and Terra work for URS Corporation. Stokoe is faculty member at the University of Texas, Yuan is one of his students and Lin is one of his postdocs. Cox is a faculty member at the University of Arkansas. Okubo is a research scientist at the USGS HVO.

Division of labor: I made **significant** contributions to this paper in terms of intellectual content by participating in a two-week field campaign to collect experimental data in Hawaii. It was a tough place to work, but someone had to do it. I also made **significant** contributions in terms of production, while Wong and Stokoe primarily led production and also made primary contributions in terms of intellectual content.

16. Wood, C.M., Cox, B.R., Wotherspoon, L.M., Green, R.A. (2011). "Dynamic Site Characterization of Christchurch Strong Motion Stations," *Bulletin of the New Zealand Society for Earthquake Engineering*, 44(4), pp. 195-204.

    Co-authors: Cox is a faculty member at University of Arkansas and Wood is one of his graduate students. Wotherspoon is a faculty member at the University of Auckland. Green is a faculty member at Virginia Tech.

    Division of labor: This publication resulted from the efforts of a two week field campaign by the authors to collect shear wave velocity profiles at liquefaction sites and strong motion stations shaken by the 2010 Darfield, New Zealand Earthquake and the 2011 Christchurch, New Zealand Earthquake. Authors Wood and Cox are **primarily** responsible for the intellectual content and production of the paper. Wotherspoon and Green also made significant intellectual and production contributions to the paper.

17. Cox, B.R., Wood, C.M., Hazirbaba, K. (2012). "Frozen and Unfrozen Shear Wave Velocity Seismic Site Classification of Fairbanks, Alaska," *Journal of Cold Regions Engineering*, 26(3), 118-145.

    Co-authors: Cox is a faculty member at University of Arkansas and Wood is one of his graduate students. Hazirbaba is a faculty member at the University of Alaska, Fairbanks.

    Division of labor: This publication resulted from the efforts of a three week field campaign by the authors to collected shear wave velocity profiles at strategic locations in Fairbanks, Alaska during both summer and winter seasons. Authors Wood and Cox are **primarily** responsible for the intellectual content and production of the paper. Hazirbaba made supportive intellectual and production contributions to the paper.

18. McCartney, J.S., Cox, B.R., Wood, C.M., El Tawati, A. (2013). "Performance Evaluation of Flexible Pavements Using a New Field Cyclic Plate Load Test," *ASTM Geotechnical Testing Journal,* 36(2), pp. 1-10.

    Co-authors: McCartney is a faculty member at the University of Colorado, Boulder and El Tawati is one of his graduate students. Cox is a faculty member at University of Texas and Wood is one of his graduate students.

    Division of labor: This publication resulted from the efforts of a research proposal with Cox as PI. Authors Wood and Cox are **primarily** responsible for the intellectual content of the paper and analyzed virtually all of the data collected during the project. McCartney also made significant contributions to the intellectual content of the paper and made primary contributions to the production. Wood and Cox made **significant** contributions to the production of the paper.

19. Cox, B.R., Boulanger, R.W., Tokimatsu, K., Wood, C.M., Abe, A., Ashford, S., Donahue, J., Ishihara, K., Kayen, R., Katsumata, K., Kishida, T., Kokusho, T., Mason, H.B., Moss, R., Stewart, J.P., Tohyama, K., Zekkos, D. (2013). "Liquefaction at Strong Motion Stations and in Urayasu City during the 2011 Tohoku-Oki Earthquake," *Earthquake Spectra*, 29(S1), pp. S55-S80.

Co-authors: Cox is a faculty member at the University of Texas and Wood is one of his graduate students. Boulanger is a faculty member at the University of California, Davis. Tokimatsu is faculty member at the Tokyo Institute of Technology. Abe works for the Tokyo Soil Research Co., Ashford is a faculty member at Oregon State University. Additional author affiliations are provided in the manuscript, which may be found in the Supplemental Materials folder.

Division of labor: This publication resulted from a combination of: (a) the efforts of a GEER reconnaissance team deployed to document the geotechnical aspects of the 2011 Tohoku, Japan Earthquake, and (b) an NSF RAPID award with Cox as PI. Authors Cox, Wood and Boulanger are **primarily** responsible for the intellectual content and production of the paper. Cox, Wood and Kayen led the field work for the RAPID project and spent several weeks in Japan collecting surface wave data at liquefaction sites. Tokimatsu provided significant contributions in terms of field support to our RAPID research team. Mason and Zekkos provided supportive roles to the RAPID field work. Other authors made supportive contributions by making observations during the GEER reconnaissance.

20. McCartney, J.S., Cox, B.R. (2013). "Role of Strain Magnitude on the Deformation Response of Geosynthetic-reinforced Soil Layers," *Geosynthetics International,* 20(3), pp. 174-190.

Co-authors: McCartney is a faculty member at the University of Colorado, Boulder and Cox is a faculty member at University of Texas.

Division of labor: This publication resulted from the efforts of a research proposal with Cox as PI. Cox and McCartney are **primarily** responsible for the intellectual content of the paper. McCartney made primary contributions to the production and Cox made **significant** contributions to production.

21. Green, R.A., Cubrinovski, M., Cox, B.R., Wood, C., Wotherspoon, L., Bradley, B., Maurer, B. (2014). "Select Liquefaction Case Histories from the 2010-2011 Canterbury Earthquake Sequence," *Earthquake Spectra*, 30(1), pp. 131-153.

Co-authors: Green is a faculty member at Virginia Tech and Maurer is one of his graduate students. Cubrinovski and Bradley are faculty members at the University of Canterbury. Cox is a faculty member at University of Texas and Wood is one of his graduate students. Wotherspoon is a faculty member at the University of Auckland.

Division of labor: This publication resulted from the efforts of: (a) several GEER reconnaissance trips following the 2010 Darfield, New Zealand Earthquake and the 2011 Christchurch, New Zealand Earthquake, of which the authors participated in, and (b) a two week field campaign by the authors to collected shear wave velocity profiles at liquefaction sites where CPT profiles existed. Green was primarily responsible for the intellectual content and production of the paper. Cox, Wood and Wotherspoon made **significant** contributions to the intellectual content by collecting and analyzing data from the field campaigns. Cubrinovski also made primary contributions to the overall field data collection. All authors besides Green, including myself, made **supportive** contributions to production.

22. Wotherspoon, L.M., Orense R.P., Jacka, M., Green, R.A., Cox, B.R., Wood, C.M. (2014). "Seismic Performance of Improved Ground Sites during the 2010-2011 Canterbury Earthquake Sequence," *Earthquake Spectra*, 30(1), pp. 111-129.

Co-authors: Wotherspoon and Orense are faculty members at the University of Auckland. Jacka works for Tonkin and Taylor consultants. Green is faculty member at Virgina Tech. Cox is a faculty member at University of Texas and Wood is one of his graduate students.

Division of labor: This publication resulted from the efforts of: several GEER reconnaissance trips following the 2010 Darfield, New Zealand Earthquake and the 2011 Christchurch, New Zealand Earthquake, of which the authors participated in. Wotherspoon and Orense were primarily responsible for the intellectual content and production of the paper. Jacka made significant contributions to both the intellectual content and production. Authors Green, Cox and Wood made **supportive** contributions in terms of intellectual content and production. For example, Cox and Wood collected and analyzed some data that aided in the evaluation of several ground improvement sites.

B. Refereed Conference Proceedings

15. Cox, B.R., McCartney, J.S., Wood, C.M., Curry, B. (2010). "Performance Evaluation of Full-Scale Geosynthetic-Reinforced Flexible Pavements Using Field Cyclic Plate Load Tests," The Transportation Research Board 89th Annual Meeting, Washington, D.C., January 10-14, 2010.

    Co-authors: Cox is a faculty member at University of Arkansas and Wood and Curry are his graduate students. McCartney is a faculty member at the University of Colorado, Boulder.

    Division of labor: This publication resulted from the efforts of a research proposal with Cox as PI. Authors Cox and McCartney are **primarily** responsible for the intellectual content and production of the paper.

16. Marinucci, A.M, Rathje, E.M, Ellington, J.S., Cox, B.R., Menq, F.-Y., and Stokoe II, K.H. (2010). "Evaluation of the Effectiveness of Prefabricated Vertical Drains using Full-Scale In Situ Staged Dynamic Testing," Art of Foundation Engineering Practice, Eds. M.H. Hussein, J.B. Anderson, and W.M. Camp, Geotechnical Special Publication 198, ASCE, pp. 380-394.

    Co-authors: Rathje is faculty member and the University of Texas and Marinucci is one of her graduate students. Ellington is a consulting engineer. Cox is a faculty member at University of Arkansas. Stokoe is a faculty member at the University of Texas and Menq is one of his postdocs.

    Division of labor: Marinucci and Rathje are primarily responsible for the intellectual content and production of this paper. Cox filled a **supportive** role in both intellectual content and production.

17. Cox, B.R., Wood, C.M. (2010). "A Comparison of Linear-Array Surface Wave Methods at a Soft Soil Site in the Mississippi Embayment," ASCE GeoFlorida: Advances in Analysis, Modeling and Design, West Palm Beach, FL, February 20-24, 2010, pp. 1369-1378.

    Co-authors: Cox is a faculty member at the University of Arkansas and Wood is one of his graduate students.

    Division of labor: I made **primary** contributions to this paper in terms of both intellectual content and production.

18. Wells, D.L., Rathje, E., Bachhuber, J., Cox, B.R., French, J., Green, R., Olson, S., Rix, G., Suncar, O., Pena, L., Mundaray, T. (2010). "Ground Deformation Effects on the 12 January 2010 Earthquake in Haiti," *Seismological Society of America Annual Meeting*, Portland, OR, April 21-23, 2010. Abstract only (published in *Seismological Research Letters*, 81(3), p. 540).

    Co-authors: Wells and French work for AMEC consultants. Rathje is a faculty member at the University of Texas and Suncar is one of her students. Bachhuber works for Fugro consultants. Cox is a faculty member at the University of Arkansas. Green is a faculty member at Virginia Tech. Olson is a faculty member at the University of Illinois. Rix is a faculty member at Georgia Tech. Pena and Mundaray are researchers from the Dominican Republic.

    Division of labor: This publication resulted from the efforts of a GEER reconnaissance team deployed to document the geotechnical aspects of the 2010 Haiti Earthquake, and a subsequently funded NSF RAPID proposal awarded to Olson (PI) and Cox (Co-PI) for follow-up research. Wells is primarily responsible for the production of this paper. I made **significant** contributions to this paper in terms of intellectual content by collecting and interpreting surface wave data at liquefaction case history sites, and **supportive** contributions in terms of production. Ultimately, I spent two weeks in the field and countless hours analyzing data for this paper, and other papers, documenting the effects of the Haiti Earthquake. All other authors also made significant intellectual contributions and supported production.

19. Menq, F.-Y., Cox, B.R., Stokoe II, K.H. (2010). "Estimating Dynamic Strain Amplitudes Beneath Mobile Shakers," *Seismological Society of America Annual Meeting*, Portland, OR, April 21-23, 2010. Abstract only (published in *Seismological Research Letters*, 81(2), p. 356).

    Co-authors: Stokoe is faculty member and Menq is one of his postdocs at the University of Texas. Cox is a faculty member at the University of Arkansas.

    Division of labor: Menq made primary contributions in terms of both intellectual content and production. I made **significant** contributions to this paper in terms of intellectual content by collecting and analyzing data and **supportive** contributions in terms of production. Stokoe also made significant intellectual contributions and supportive production contributions.

20. McCartney, J.S., Cox, B.R., Wood, C.M., Curry, B. (2010). "Evaluation of Geosynthetic-Reinforced Flexible Pavements Using Static Plate Load Tests," 9th International Conference on Geosynthetics, Guaruja, Brazil, May 23-27, 2010.

    Co-authors: McCartney is a faculty member at the University of Colorado, Boulder. Cox is a faculty member at University of Arkansas and Wood and Curry are his graduate students.

    Division of labor: This publication resulted from the efforts of a research proposal with Cox as PI. Authors Cox and McCartney are **primarily** responsible for the intellectual content and production of the paper.

21. Menq, F.-Y., Cox, B.R., Park, K., Stokoe II, K.H. (2010). "Estimating Dynamic Strains in Soil Generated by the Large Mobile Shakers at NEES@UTexas Before Testing," 9th U.S. National and 10th Canadian Conference on Earthquake Engineering: Reaching Beyond Borders, Toronto, Canada, July 25-29, 2010.

    Co-authors: Stokoe is faculty member at the University of Texas, Menq is one of his postdocs, and Park is one of his graduate students. Cox is a faculty member at the University of Arkansas.

    Division of labor: Menq made primary contributions in terms of both intellectual content and production. I made **significant** contributions to this paper in terms of intellectual content by collecting and analyzing data and **supportive** contributions in terms of production. Stokoe also made significant intellectual contributions and supportive production contributions.

22. Cox, B.R., Cothren, J., Barnes, A., Wartman, J., Rodriguez-Marek, A., Meneses, J. (2010). "Towards Quantifying Movement of a Massive Lateral Spread Using High-Resolution Satellite Image Processing," 9th U.S. National and 10th Canadian Conference on Earthquake Engineering: Reaching Beyond Borders, Toronto, Canada, July 25-29, 2010.

    Co-authors: Cox and Cothren are faculty member at the University of Arkansas. Barnes is research staff at the University of Arkansas. Wartman is a faculty at the University of Washington. Rodriguez-Marek is faculty member at Virginia Tech. Meneses is a consulting engineer.

    Division of labor: This publication resulted from a GEER reconnaissance trip to document the effects of the Pisco, Peru Earthquake, and a subsequent NSF project with Cox at PI. I made **primary** contributions to this paper in terms of intellectual content and production. Cothren and Barnes also made significant contributions in terms of both intellectual content and production. All other authors made supportive contributions.

23. McCartney, J.S., Cox, B.R., Trowler, C., Wood, C.M., Khosravi, A. (2011). "Seasonal Effects on the Dynamic Deformation of Geosynthetic-Reinforced Pavements," ASCE Geo-Frontiers: Advances in Geotechnical Engineering, Dallas, TX, March 13-16, 2011, pp. 1872-1881.

    Co-authors: McCartney is a faculty member at the University of Colorado, Boulder and Khosravi is one of his graduate students. Cox is a faculty member at University of Arkansas and Wood and Trowler are his graduate students.

    Division of labor: This publication resulted from the efforts of a research proposal with Cox as PI. Authors Cox and McCartney are **primarily** responsible for the intellectual content and production of the paper.

24. Stokoe II, K.H., Lee, J.-S., Nam, B.-H., Cox, B.R., and Oshinski, E. (2011). "Investigations of Galveston Airport Pavements after Hurricane Ike in 2008 and Liquefaction Sites in Residential Areas after the New Zealand Earthquake in 2010," Proceedings of the 3rd International Conference on Geotechnical Engineering for Disaster Mitigation and Rehabilitation, Semarang, Indonesia, 18-May 18-20, 2011, pp. 255-262.

    Co-authors: Stokoe is faculty member at the University of Texas and Lee and Nam are his graduate students. Cox is a faculty member at the University of Arkansas. Oshinski is a consulting engineer.

Division of labor: Stokoe and his students made primary contributions in terms of both intellectual content and production. I made **significant** contributions to this paper in terms of intellectual content and **supportive** contributions in terms of production.

25. Cox, B.R., Wood, C.M. (2011). "Surface Wave Benchmarking Exercise: Methodologies, Results and Uncertainties," ASCE GeoRisk2011: Risk Assessment and Management in Geoengineering, Atlanta, GA, June 26-28, 2011, pp. 845-852.

    Co-authors: Cox is a faculty member at the University of Arkansas and Wood is one of his graduate students.

    Division of labor: I made **primary** contributions to this paper in terms of both intellectual content and production.

26. Kayen, R.E., Ishihara, K., Stewart, J.P., Tokimatsu, K., Cox, B.R., Tanaka, Y., Kokusho, T., Mason, H.B., Moss, R.E.S, Zekkos, D., Wood, C.M., Katsumata, K., Estevez, I.A., Cullenward, S.S., Tanaka, H., Harder, L.F., Kelson, K.I., Kishida, T. (2012). "Geotechnical Deformations at Ground Failure Sites from the March 11, 2011 Great Tohoku Earthquake, Japan: Field Mapping, LIDAR Modeling, and Surface Wave Investigation." Proceedings of the 9th International Conference on Urban Earthquake Engineering/4th Asia Conference on Earthquake Engineering, March 6-8, 2012, Tokyo, Japan. pp. 123-129.

    Co-authors: Kayen is a research scientist for the USGS. Ishihara is a faculty member at Chuo University. Stewart is faculty member at UCLA. Tokimatsu is faculty member at the Tokyo Institute of Technology. Cox is a faculty member at the University of Texas and Wood is one of his graduate students. Additional author affiliations are provided in the manuscript, which may be found in the Supplemental Materials folder.

    Division of labor: This publication resulted from a combination of: (a) the efforts of a GEER reconnaissance team deployed to document the geotechnical aspects of the 2011 Tohoku, Japan Earthquake, and (b) an NSF RAPID award with Cox as PI. Kayen made primary contributions to the intellectual content and production of the paper. Authors Cox and Wood made **significant** contributions to both the intellectual content and production. Cox, Wood and Kayen led the field work for the RAPID project and spent several weeks in Japan collecting surface wave data at liquefaction sites. Tokimatsu provided significant contributions in terms of field support to our RAPID research team. Mason and Zekkos provided supportive roles to the RAPID field work. Other authors made either significant or supportive contributions during the GEER reconnaissance.

27. Wood, C.M., Cox, B.R. (2012). "A Comparison of MASW Dispersion Uncertainty and Bias for Impact and Harmonic Sources," ASCE Geo-Congress 2012: State of the Art and Practice in Geotechnical Engineering, Oakland, CA, March 25-29, 2012, pp. 2756-2765.

    Co-authors: Cox is a faculty member at the University of Arkansas and Wood is one of his graduate students.

    Division of labor: I made **primary** contributions to this paper in terms of both intellectual content and production.

28. Griffiths, S.C., Cox, B.R. (2012). "A Comparison of SPT-Based Empirical Liquefaction Triggering Procedures for Soils at Significant Depths (+20 m)," ASCE Geo-Congress 2012: State of the Art and Practice in Geotechnical Engineering, Oakland, CA, March 25-29, 2012, pp. 1770-1779.

    Co-authors: Cox is a faculty member at the University of Arkansas and Griffiths is one of his graduate students.

    Division of labor: I made **primary** contributions to this paper in terms of both intellectual content and production.

29. Wood, C.M., Cox, B.R., Rodriguez-Marek, A., Assimaki, D., Wartman, J., Pando, M. (2012). "Topographic Effects from Longwall Coal Mining Seismicity: Phase I Experimental Setup and Results," Second International Conference on Performance-Based Design in Earthquake Geotechnical Engineering, Taormina, Italy, May 28-30, 2012, Paper No. 1.06, pp. 51-62.

    Co-authors: Cox is a faculty member at the University of Arkansas and Wood is one of his graduate students. Rodriguez-Marek is faculty member at Virginia Tech. Assimaki is a faculty member at Georgia Tech. Wartman is a faculty at the University of Washington. Pando is a faculty member at the University of North Carolina, Charlotte.

    Division of labor: Cox and Wood made **primary** contributions to this paper in terms of both intellectual content and production. All other authors made supportive contributions.

30. Pando, M., Suarez, L.E., Rodriguez-Marek, A., Dika, S.L., Assimaki, D., Cox, B.R., Wartman, J. (2012). "A Bridge to the Doctoral Program Strategy for Increasing Latinos in the Earthquake Engineering Professoriate", Proceedings of the 2012 American Society of Engineering Education Conference, San Antonio, TX, June 10-13, 2012.

    Co-authors: Pando and Dika are faculty members at the University of North Carolina, Charlotte. Suarez is faculty member at the University of Puerto Rico, Mayagez. Rodriguez-Marek is faculty member at Virginia Tech. Assimaki is a faculty member at Georgia Tech. Cox is a faculty member at the University of Arkansas. Wartman is a faculty at the University of Washington.

    Division of labor: Pando made primary contributions to this paper in terms of both intellectual content and production. I made **supportive** contributions.

31. Wotherspoon, L.M., Orense, R.P., Bradley, B.A., Cox, B.R., Wood, C.M., Green, R.A. (2013). "Soil Profile Characterisation of Christchurch Strong Motion Stations", New Zealand Society for Earthquake Engineering 2013 Conference: Same Risks – New Realities, Wellington, New Zealand, April 26-28, 2013.

    Co-authors: Wotherspoon and Orense are faculty members at the University of Auckland. Bradley is a faculty member at the University of Canterbury. Cox is a faculty member at University of Texas and Wood is one of his graduate students. Green is a faculty member at Virginia Tech.

Division of labor: This publication resulted from the efforts of a two week field campaign by the authors to collected shear wave velocity profiles at liquefaction sites and strong motion stations shaken by the 2010 Darfield, New Zealand Earthquake and the 2011 Christchurch, New Zealand Earthquake. Authors Wotherspoon and Bradley followed up with other site investigations. Wotherspoon is primarily responsible for the intellectual content and production of the paper. Authors Cox and Wood made **significant** contributions to the intellectual content and **supportive** contributions to production.

32. Wood, C.M., Ellis, T.B., Teague, D.P., Cox, B.R. (2014). "Comprehensive Analysis of the UTexas1 Surface Wave Dataset," ASCE Geo-Congress 2014: Geo-Characterization and Modeling for Sustainability, Atlanta, GA, February 23-26, 2014, pp. 820-829.

    Co-authors: Cox is a faculty member at the University of Texas and Wood, Ellis and Teague are his graduate students.

    Division of labor: I made **primary** contributions to this paper in terms of both intellectual content and production.

33. Cox, B.R., Wood, C.M., Teague, D.P. (2014). "Synthesis of the UTexas1 Surface Wave Dataset Blind-Analysis Study: Inter-Analyst Dispersion and Shear Wave Velocity Uncertainty," ASCE Geo-Congress 2014: Geo-Characterization and Modeling for Sustainability, Atlanta, GA, February 23-26, 2014, pp. 850-859.

    Co-authors: Cox is a faculty member at the University of Texas and Wood and Teague are his graduate students.

    Division of labor: I made **primary** contributions to this paper in terms of both intellectual content and production.

No Works Forthcoming

No leave of absences without pay

Statistical Summary for "In Rank"
Brady R. Cox

Metric	Value
Peer-Reviewed Journal Publications in Rank	22
Peer Reviewed Conference Proceedings Publications in Rank	33
Total Citations of all Publications (career)*	234
h-index (career)*	9
Google Scholar Total Citations of all Publications (career)	274
Google Scholar h-index (career)	9
Research Funding Raised (total share)	$3,757,677
Research Funding Raised (candidate share)	$1,919,183
Total Grants/Contracts Received	16
PI on Grants/Contracts Received	8
PhD Students Completed (count 1 if sole advisor, 0.5 if co-advised)	1
MS Students Completed (count 1 if sole advisor, 0.5 if co-advised)	7
PhD Students in Pipeline (as of 09/2014)	4
MS Students in Pipeline (as of 09/2014)	0
Number of Courses Taught	UT = 4 UA = 6
Number of Students Taught	UT = 150 UA = 384
Average Instructor Evaluation UG	UT = 4.5 UA = 4.3
Average Instructor Evaluation Grad	UT = 4.3 UA = 4.5
Average Course Evaluation UG	UT = 3.9 UA = NA
Average Course Evaluation Grad	UT = 3.8 UA = NA
Number of Teaching Awards	0
Student Organizations Advised	0
Undergraduates Supervised	3 - NSF REU Students
Journal Editorial Boards	1
Symposia Organized	2

* Source: Publish or Perish Software on May 29, 2014

Faculty Activity Reports

My 2012-2013 and 2013-2014 Faculty Activity Reports (FAR) are provided below. I do not have FAR reports for previous years because I joined UT Austin in August of 2012.

Faculty Annual Report for Year End August 31, 2013

Brady R. Cox, Ph.D., P.E.

Assistant Professor

Civil, Architectural, and Environmental Engineering Department

Part 1: Teaching Activities

A. COURSES TAUGHT:

SEMESTER TAUGHT		COURSE NO.		COURSE NAME	NO. SECTIONS/STUDENTS	
Fall	2012	CE	357	Geotechnical Engineering	6	43
Spring	2013	CE	387R	Soil and Rock Dynamics	1	26

Individual Instructions

SEMESTER TAUGHT		COURSE NO.		COURSE NAME	NO.STUDENTS	
Fall	2012	CE	397S	15 – Dissertation Research	1	
Fall	2012	CE	397S	15 – Dissertation Research	1	
Fall	2012	CE	397S	15 – Dissertation Research	1	
Fall	2012	CE	697S	15 – Dissertation Research	1	
Spring	2013	CE	397	Special Studies in Civil Engr	1	
Spring	2013	CE	697S	15 – Dissertation Research	1	
Spring	2013	CE	697S	15 – Dissertation Research	1	
Spring	2013	CE	699R	Dissertation	1	
Summer	2013	CE	W397S	15 – Dissertation Research	1	
Summer	2013	CE	W397S	15 – Dissertation Research	1	

Summer	2013	CE	W397S	15 – Dissertation Research	1	
Summer	2013	CE	W399W	Dissertation	1	
					1	

B. GRADUATE STUDENT RESEARCH

Supervisor, PhD Dissertations

STUDENT	DEPARTMENT	GRAD. DATE	AREA
Clinton M. Wood	CAEE	Sumr 2013	GEO
"Field Investigation of Topographic Effects using Mine Seismicity"			
Shawn Giffiths	CAEE	In Progress	GEO
Trenton Ellis	CAEE	In Progress	GEO
Andrew Stolte	CAEE	In Progress	GEO

Supervisor, MS Theses/Reports

STUDENT	DEPARTMENT	GRAD. DATE	AREA
David Teague	CAEE	In Progress	GEO

Co-Supervisor, PhD Dissertations

STUDENT	DEPARTMENT	GRAD. DATE	AREA

None

CO-Supervisor, MS Theses/Reports

STUDENT	DEPARTMENT	GRAD. DATE	AREA

None

Member PhD Committees

STUDENT	DEPARTMENT	GRAD. DATE	AREA
Menzer Pehlivan	CAEE	Spring 2013	GEO
"Incorporating Site Response Analysis and Associated Uncertainties into the Seismic Hazard Assessment of Nuclear Facilities"			
Oscar Suncar	CAEE	In Progress	GEO
Georgios Zalachoris	CAEE	In Progress	GEO
Yubing Wang	CAEE	In Progress	GEO

Reader, MS Committees

STUDENT	DEPARTMENT	GRAD. DATE	AREA
Bryce Burkett	CAEE	Spring 2013	GEO
"Resistance Analysis of Axially Loaded Drilled Shafts Socketed in Shale"			

C. OTHER RESEARCH SUPERVISION

None

D. ADDITIONAL TEACHING ACTIVITIES

None

Part 2: Administrative And Committee Assignments

A. ADMINISTRATIVE COMMITTEES None

B. UNIVERSITY COMMITTEES

University None

College None

Department

Curriculum Committee

Distinguished Lecture Series Committee

C. OUTSIDE COMMITTEES

International

Member, INTERPACIFIC Project Committee (Intercomparison of methods for site parameter and velocity profile characterization). A sub-project of the SIGMA and CASHIMA research projects [SIMGA: Seismic Ground Motion Assessment, funded by French and European enterprises (EDF, AREVA, CEA, ENEL); CASHIMA: funded by CEA (Commissariat à l'Energie Atomique et aux Energies Alternatives, Cadarache, France), ILL (Institute Laue Langevin, Grenoble, France) and ITER Organization (Cadarache, France)].

National

Associate Editor, ASCE *Journal of Geotechnical and Geoenvironmental Engineering*

Member, Geo-Engineering Extreme Events Reconnaissance (GEER) Association

Member, Network for Earthquake Engineering Simulation (NEES), Data Curation Subcommittee

Member, ASCE Geo-Institute, Earthquake Engineering and Soil Dynamics Committee

Member, ASCE Geo-Institute, Geophysical Engineering Committee

Member, ASTM, Committee D18 on Soil and Rock

State None

Part 3: Contributions to Technology

A. REFEREED ARCHIVAL JOURNALS

In Print (3):

5. McCartney, J.S., Cox, B.R. (2013). "Role of Strain Magnitude on the Deformation Response of Geosynthetic-Reinforced Soil Layers," *Geosynthetics International,* 20(3), 1-17.
6. Cox, B.R., Boulanger, R.W., Tokimatsu, K., Wood, C.M., Abe, A., Ashford, S., Donahue, J., Ishihara, K., Kayen, R., Katsumata, K., Kishida, T., Kokusho, T., Mason, B., Moss, R., Stewart, J., Tohyama, K., Zekkos, D. (2013). "Liquefaction at Strong Motion Stations and in Urayasu City during the 2011 Great East Japan Earthquake," *Earthquake Spectra*, 29(1), 55-80.
7. McCartney, J.S., Cox, B.R., Wood, C.M., El Tawati, A. (2013). "Performance Evaluation of Flexible Pavements Using a New Field Cyclic Plate Load Test," *ASTM Geotechnical Testing Journal,* 36(2), 206-215.

Accepted (1):

1. Green, R.A., Cubrinovski, M., Cox, B.R., Wood, C.M., Wotherspoon, L., Bradley, B., Maurer, B. (2013). "Select Liquefaction Case Histories from the 2010-2011 Canterbury Earthquake Sequence," *Earthquake Spectra*, (accepted).

Under Review (1):

1. Wotherspoon, L., Orense R., Jacka, M., Green, R.A., Cox, B.R., Wood, C.M. (2013). "Seismic Performance of Improved Ground Sites during the Canterbury Earthquake Sequence," *Earthquake Spectra*, (submitted).

B. REFEREED CONFERENCE PROCEEDINGS (1):

1. Wotherspoon, L.M., Orense, R.P., Bradley, B.A., Cox, B.R., Wood, C.M., Green, R.A. (2013). "Soil Profile Characterisation of Christchurch Strong Motion Stations", New Zealand Society for Earthquake Engineering 2013 Conference: Same Risks – New Realities, Wellington, New Zealand, 26-28 April 2013.

C. NON-REFEREED PAPERS None

D. BOOKS AUTHORED/CO-AUTHORED None

E. BOOKS EDITED/CO-EDITED None

F. BOOKS CHAPTERS None

G. BOUND TECHNICAL REPORTS None

H. ORAL PRESENTATIONS (6):

National/International Meetings or Conferences (3):

1. Cox, B.R. "Deep Vs Profiling for Dynamic Characterization of Christchurch, New Zealand: Towards Reliably Merging Large Active-Source and Ambient-Wavefield Surface Wave Methods," presented at Quake Summit 2013 – NEES Annual Meeting, Reno, NV, August 8, 2013.
2. Cox, B.R. "Deep Vs Profiling for Dynamic Characterization of Christchurch, New Zealand: Towards Reliably Merging Large Active-Source and Ambient-Wavefield Surface Wave Methods," presented at the International Conference on Earthquake Geotechnical Engineering: From Case History to Practice - in honour of Professor Kenji Ishihara, Istanbul, Turkey, June 17-19, 2013.
3. Cox, B.R. (Invited) "Liquefaction at Strong Motion Stations and in Urayasu City During the 2011 Great East Japan Earthquake," presented at the Pacific Earthquake Engineering Research Center (PEER) TSRP Liquefaction Workshop, Berkeley, CA, April 24, 2013.

Regional/State/Local Meetings or Conferences (3):

1. Cox, B.R. (Invited) "Topographic Effects in Earthquake Ground Motions: Insights Gained from Field Studies of Frequent and Predictable Mining Seismicity" presented at the UT Austin Acoustics Seminar, Austin, TX, November 9, 2012.
2. Cox, B.R. (Invited) "Lessons Learned from Recent Geotechnical Earthquake Reconnaissance" presented at the UT Austin CAEE External Advisory Committee Meeting, Austin, TX, November 2, 2012.
3. Cox, B.R. (Invited) "Liquefaction Lessons Learned from Recent Post-Earthquake Reconnaissance" presented at the UT Austin EERI Student Chapter Seminar, Austin, TX, October 24, 2012.

I. PATENTS None

J. COPYRIGHTED SOFTWARE None

K. OTHER (Media Articles/Interviews)

- "UT Engineers Shake Up Earthquake Research in New Zealand", Alcalde: The Official Publication of the Texas Exes, August 6, 2013, (http://alcalde.texasexes.org/2013/08/ut-engineers-shake-up-earthquake-research-in-new-zealand/).
- "Hacking the Planet – Earthquakes", The Weather Channel, airdate Thursday, March 21st, 2013, 30 minute feature (http://www.weather.com/video/hacking-an-earthquake-35747).
- "T-Rex Takes on Shaky Christchurch", University of Texas Cockrell School of Engineering, February 4, 2013, (http://www.engr.utexas.edu/features/7536-brady-cox-trex-shaker-truck).
- "Quake-making Truck Heads to Christchurch", The New Zealand Herald, January 31, 2013, http://www.nzherald.co.nz/nz/news/article.cfm?c_id=1&objectid=10862613
- "Earthquake Truck Shakes to Test the Ground", The Weather Channel, January 30, 2013, http://www.weather.com/news/trex-earthquake-truck-20130130
- "T-Rex Takes on Shaky Christchurch", George E Brown Jr., Network for Earthquake Engineering Simulation, January 25, 2013, (https://dev.www.purdue.edu/newsroom/purduetoday/releases/2013/Q1/t-rex-takes-on-shaky-christchurch1.html).

Part 4: Research Activities/Grants & Contracts

A. NEW PROJECTS FUNDED-INDIVIDUAL

Project Title:	*RAPID: Deep Shear Wave Velocity Profiling for Seismic Characterization of Christchurch, NZ - Reliably Merging Large Active-Source and Passive-Wavefield Surface Wave Methods*
Sponsor:	NSF
Begin/End Dates:	December 2012/ November 2013
Total Award:	$197,684
Budget for 12-13:	
Expended for 12-13:	$136,922
Reporting Center:	GEC/CAEE

B. NEW PROJECTS FUNDED—JOINT

Project Title:	*RAPID: Field Investigations of Shallow Ground Improvement Methods for Inhibiting Liquefaction Triggering; Christchurch, New Zealand*

Sponsor:	NSF
Principal Investigator:	Kenneth H. Stokoe, II
Co-Principal Investigators:	Brady R. Cox
Begin/End Dates:	June 2013/May 2014
Award (Total):	$197,966
Award (Your Share):	$98,983
12-13 Budget (Total):	
12-13 Budget (Your Share):	
12-13 Expended (Your Share):	$51,570
Reporting Center:	GEC/CAEE

Project Title:	*Field Investigations of Shallow Ground Improvement Methods for Inhibiting Liquefaction Triggering; Christchurch, New Zealand*
Sponsor:	New Zealand Earthquake Commission/Tonkin and Taylor Ltd., Christchurch, NZ
Principal Investigator:	Kenneth H. Stokoe, II
Co-Principal Investigators:	Brady R. Cox
Begin/End Dates:	June 2013/May 2014
Award (Total):	$223,518
Award (Your Share):	$111,759
12-13 Budget (Total):	
12-13 Budget (Your Share):	
12-13 Expended (Your Share):	~ $56,000 (exact amount unknown at the moment)
Reporting Center:	GEC/CAEE

C. CONTINUING PROJECTS—INDIVIDUAL

Project Title:	*CAREER/PECASE: Revolutionizing Surface Wave Methods for Engineering Analyses – from Deterministic and Incoherent to Probabilistic and Standardized*

	(DIPS)
Sponsor:	NSF
Begin/End Dates:	July 2011/June 2016
Total Award:	$421,600
Budget for 12-13:	
Expended for 12-13:	$32,286
Reporting Center:	GEC/CAEE

D. CONTINUING PROJECTS—JOINT

Project Title:	*NEES-CR: Topographic Effects in Strong Ground Motion – From Physical and Numerical Modeling to Design*
Sponsor:	NSF/Virginia Tech
Principal Investigator:	Adrian Rodriguez-Marek (VT)
Co-Principal Investigators:	Brady R. Cox (UT), Dominic Assimaki (GT), Joseph Wartman (UW)
Begin/End Dates:	October 2009/September 2014
Award (Total):	$1,144,593
Award (Your Share):	$211,857
12-13 Budget (Total):	
12-13 Budget (Your Share):	$48,672
12-13 Expended (Your Share):	$47,944
Reporting Center:	GEC/CAEE

E. RESEARCH PROPOSALS SUBMITTED—INDIVIDUAL

Project Title:

Sponsor:

Begin/End Dates:

Requested Budget (Total):

Proposal Status: Under Review, Award Pending, Rejected

Reporting Center:

F. RESEARCH PROPOSALS SUBMITTED—JOINT

Project Title:

Sponsor:

Principal Investigator:

Co-Principal Investigators:

Begin/End Dates:

Requested Budget (Total):

Proposal Status: Under Review, Award Pending, Rejected

Reporting Center:

G. DESCRIPTION OF CURRENT SPONSORED RESEARCH

CAREER/PECASE: Revolutionizing Surface Wave Methods for Engineering Analyses – from Deterministic and Incoherent to Probabilistic and Standardized (DIPS) **(PI; NSF)**

Surface wave methods (SWM's) have become fully entrenched as powerful tools in geotechnical site investigation over the past decade, and their end result - a subsurface profile of small-strain shear modulus/shear wave velocity (V_s) - is used as a key input parameter in many engineering analyses. The expanding use of SWM's is driven by the desire to "reach" within the earth and retrieve accurate and meaningful engineering parameters without the need for borings. Traditionally, SWM's have been used to provide a single, deterministic V_s profile for each site tested, without consideration given to measurement/dispersion uncertainty and how it propagates forward through the inversion process used to estimate V_s. However, as the profession moves toward probabilistic design and performance-based engineering, the inability to quantify uncertainty in V_s from SWM's has been exposed as a major impediment to future progress.

This research (aimed at "smoothing-out the dips" in SWM's) involves: (1) quantifying measurement/dispersion uncertainty in SWM's so that Monte Carlo-based inversions can be used to propagate this uncertainty forward into a suite of acceptable V_s profiles with confidence intervals on layer thickness and velocity (i.e., advancing from deterministic to probabilistic), and (2) developing standards for SWM's applied to solving engineering problems (i.e., advancing from incoherent recommendations to coherent standards). The DIPS plan is guided by the vision to collect and analyze a unique, large and freely-shared set of experimental data at key benchmark sites across the globe using the four main types of SWM's with systematically varied acquisition parameters. Meaningful dispersion uncertainty will be evaluated for each set of acquisition parameters using newly-

proposed methods. Intra-method variability in dispersion estimates will then be examined and the set of parameters with the lowest uncertainty selected to anchor the development of standards. With meaningful estimates of dispersion uncertainty, Monte Carlo inversions will be used to establish confidence intervals for V_s layer thickness and velocity, resulting in fully probabilistic results that can be incorporated into subsequent performance-based analyses.

Over the past year, I have collected the first of four planned benchmark datasets (the UTexas1 Surface Wave Dataset) at a site in Christchurch, New Zealand. This dataset was shared with 10 expert analysts from around the globe. Each expert was asked to process the dataset and document their results in a paper submitted to a conference session I have organized at the ASCE 2014 Geo-Congress on Geo-Characterization and Modeling for Sustainability, to be held in Atlanta, GA on February 23-26, 2014. I have used these results to write a synthesis paper for the session that documents inter-analyst frequency-dependent uncertainty in dispersion estimates and depth-dependent uncertainty in Vs. The focus of this study is not about evaluating how many/which analysts obtain the "correct" answer, but rather on quantifying the range of answers one might expect from different analysts attempting to characterize the same site. This is one of the key goals of my CAREER/PECASE research. Plans are currently being formulated to collect an additional benchmark dataset at a site in either France or Italy this fall.

NEES-CR: Topographic Effects in Strong Ground Motion – From Physical and Numerical Modeling to Design
(Co-PI; NSF through Virginia Tech; PI Adrian Rodriguez-Marek)

Topographic effects refer to the modification and amplification of seismic ground motion in the vicinity of topographic features such as hillsides, ridges, and canyons. Because tectonics and topography are closely related, most seismically active regions of the world are marked by significant topographic relief. In recent decades, population growth and scarcity of undeveloped metropolitan land have changed urban land use patterns and placed an increasing number of people and infrastructure assets in areas susceptible to topographic effects during earthquakes. Although it is widely recognized that topographic amplification can elevate seismic risk, there is currently no consensus on how to reliably quantify its effects. Lack of consensus has precluded development of acceptable guidelines on how to account for this phenomenon in practice, thus leaving an important factor contributing to seismic hazard unaccounted for in routine design. Until now, a major impediment towards understanding and realistically modeling topographic effects has been the lack of a statistically significant number of seismic recordings from densely instrumented sites with topographic features. Moreover, while existing theoretical models are generally capable of qualitatively predicting the effects of irregular topographic features on seismic ground motion, there is still significant quantitative disagreement between predictions and observations. This research addresses the problem of topographic amplification with a study that includes a comprehensive and integrated program of experimental simulations, field measurements, empirical data analysis, and numerical modeling.

My responsibilities in this project have centered around collecting field measurements of topographic amplification. We have chosen to investigate topographic effects using frequent, shallow and predictable seismicity induced by underground longwall coal mining in central-eastern Utah, USA. These mining activities produce small magnitude earthquakes (generally ML<4.0) on a consistent basis that have been shown to resemble the double-couple shear mechanisms of traditional earthquake ground motions. Locally-dense arrays of seismometers deployed over various topographic features were used to passively monitor seismic energy produced by mining-induced implosions and/or stress redistribution in the subsurface. The research consisted of two separate studies: an initial feasibility experiment (Phase I) followed by a larger-scale main study (Phase II). Over 50 distinct, small- magnitude (M_L < 1.6) seismic events were identified in each phase. These events were analyzed for topographic effects in the time domain using the Peak Ground Velocity (PGV), and in the frequency domain using the Standard Spectral Ratio (SSR) method, the

Median Reference Method (MRM), and the Horizontal-to-Vertical Spectral Ratio (HVSR) method. The polarities of the horizontal ground motions were also visualized using directional analyses. The various analysis methods were compared to assess their ability to estimate amplification factors and determine the topographic frequencies of interest for each feature instrumented. The MRM was found to provide the most consistent, and presumably accurate, estimates of the amplification factor and frequency range for topographic effects.

Results from this study clearly indicated that topographic amplification of ground motions does in fact occur. These amplifications were very frequency dependent, and the frequency range was correctly estimated in many, but not all, cases using simplified, analytical methods based on the geotechnical and geometrical properties of the topography. Amplifications in this study were found to generally range from 2 to 3 times a reference/baseline site condition, with some complex 3D features experiencing amplifications as high as 10. Maximum amplifications occurred near the crest of topographic features with slope angles greater than approximately 15 degrees, and the amplifications were generally oriented in the direction of steepest topographic relief, with some dependency on wave propagation direction.

My Ph.D. student dedicated to this project (Clinton M. Wood) graduated in August 2013 and accepted a tenure-track faculty position at the University of Arkansas. We are currently working on several journal articles related to our research on topographic effects. Furthermore, we continue to interact with the research team members from other institutions to fulfill the ultimate goals of the project. We believe this work will result in: (i) an order-of-magnitude increase in the amount of high quality data on topographic amplification, (ii) greater fundamental understanding of this phenomenon, (iii) quantification of topographic effects on ground motions, (iv) improved attenuation relationships that account for topographic amplification, and (v) widely adopted guidelines and provisions to account for this seismic hazard in practice. Ultimately, this work will allow seismic risk to be more effectively managed in terms of ground motion quantification and site response prediction.

RAPID: Deep Shear Wave Velocity Profiling for Seismic Characterization of Christchurch, NZ - Reliably Merging Large Active-Source and Passive-Wavefield Surface Wave Methods **(PI; NSF)**

In 2010-2011, the city of Christchurch, New Zealand was devastated by a series of powerful earthquakes, the most destructive being the 22 February 2011 M_w6.2 Christchurch Earthquake. During this event, the seismic demands imposed on the built environment at many locations in the city were higher than engineering design levels, causing severe structural damage and collapse, especially within the central business district (CBD). Ultimately, the Christchurch Earthquake resulted in 181 casualties, thousands of injuries, and widespread soil liquefaction that caused billions of dollars in damage to buildings, homes and infrastructure. The entire CBD was cordoned-off following this event and remained closed to the public for over two years. An estimated 2400 out of 3000 structures have been, or currently are being, demolished as a result. A network of 19 seismic recording stations in the greater Christchurch area captured an extensive and unique set of ground motions (GM) during the 2010-2011 earthquakes. Potentially, these GM can be used for back-analyses aimed at understanding the spatial variability of the ground shaking (particularly site and basin effects), followed by accurate forward-estimates aimed at quantifying the amplitude and frequency content of future design GM. However, detailed GM analyses cannot presently be conducted because no information exists on the shear wave velocity (V_s) structure of the greater-than-400-m deep interlayered sand and gravel deposits that underlie Christchurch.

The thrust of this research has been to conduct deep (>400 m) V_s profiling at 15 key sites in Christchurch, New Zealand to aid in important seismic GM response analyses for rebuilding of the city. The only way to economically and rapidly obtain V_s estimates to these great depths is through non-intrusive surface wave testing. However, there is currently a great deal of uncertainty involved in the passive-wavefield techniques

most commonly utilized for deep V_s profiling. Therefore, a unique study will be conducted to compare and merge data from large active-source and passive-wavefield surface wave methods over an extended frequency/wavelength range, which will allow robust determination of data uncertainty and relative bias. Over the past year, active-source surface wave measurements have been conducted using one of the large and unique NEES@UTexas mobile, servo-hydraulic shakers and up to24 1-Hz geophones, while passive-wavefield data has been collected using intermediate- and large-diameter circular sensor arrays (60-, 200- and 400-m diameters) composed of 10 broadband seismometers. This research has tripled the available comparisons between large active-source and passive-wavefield surface wave methods utilized for deep V_s profiling. These comparisons are needed before confidence in utilizing passive-wavefield methods independently can be achieved. Therefore, the merits of this work include: (a) the collection and interpretation of a one-of-a-kind dataset that can be used for evaluating the reliability involved with merging large active-source and passive-wavefield surface wave methods for deep V_s profiling, and (b) the advancement in accurate ground motion prediction for deep sedimentary basins made possible by these deep V_s profiles through analysis of a unique set of damaging GM records from multiple seismic events. Progress made on both of these issues will directly impact earthquake engineering studies in the U.S., New Zealand, and throughout the world.

This research has served to strengthen my international research collaborations New Zealand colleagues and other important seismic researchers throughout the U.S. Additionally, I was able to provide four different U.S. graduate students with rewarding international travel experiences that will serve to balance their technical education and expose them to the globally-connected problems that still exist in earthquake engineering. Furthermore, one of the key benchmark surface wave datasets for my CAREER/PECASE research (as discussed above) was obtain in New Zealand during the field experiments conducted during this project.

RAPID: Field Investigations of Shallow Ground Improvement Methods for Inhibiting Liquefaction Triggering; Christchurch, New Zealand **(Co-PI; NSF; PI Kenneth H. Stokoe II)**

As noted above, in 2010-2011, the city of Christchurch, New Zealand was devastated by a series of powerful earthquakes, including six significant events. The February 2011 Christchurch Earthquake (movement magnitude, M_w, 6.2) generated the largest ground motions in the city, with horizontal peak ground accelerations between 0.37 and 0.52 g. The 2010-2011 earthquakes caused repeated liquefaction throughout the suburbs of Christchurch. Some key observations and impacts are that: (1) liquefaction was particularly extensive and damaging along the meandering loops of the Avon River, now designated as part of the "Red Zone" (zone where residential structures will not be rebuilt), (2) more than 7,000 residential properties are being abandoned in the "Red Zone" because the damage is beyond economic repair, (3) an estimated additional 15,000 properties were affected by liquefaction, and (4) the total economic loss is estimated to be from 25 to 30 billion NZ dollars (or 15 to 18% of New Zealand's GDP). One critical problem facing Christchurch and the Canterbury region is rebuilding on land that remains at risk of liquefaction in future earthquakes. This problem arises after nearly all earthquakes and little information exists on ground improvement methods that can be used to increase the resilience of residential structures and low-rise buildings in future earthquakes.

Facing this critical, time-sensitive problem, the New Zealand authorities have contributed over $2M (NZ) to a project involving full-scale field test trials of shallow ground improvement methods. The goal is to determine if, and which, ground improvement methods achieve the objectives of inhibiting liquefaction triggering in the improved ground and are cost-effective measures. This new knowledge, which is applicable in the U.S. and worldwide, is rapidly needed as part formulating the path forward in rebuilding the infrastructure in Christchurch and the Canterbury region. The liquefaction testing is currently being conducted using the large mobile shaker, called T-Rex, that is operated by NEES@UTexas. T-Rex is being used to simulate a wide range of controlled earthquake shaking levels at the ground improvement sites. This unique opportunity exists

because T-Rex was already in Christchurch as a result of an earlier NSF project involving deep seismic profiling (as documented above).

This research includes the collection and interpretation of a one-of-a-kind dataset that can be used in the design of shallow ground improvement methods to inhibit liquefaction triggering of saturated soils. This knowledge currently does not exist but has numerous applications in earthquake-prone areas in the U.S. and worldwide for residential structures and low-rise commercial buildings. This new knowledge will help develop a more comprehensive understanding of soil liquefaction risk and ways to mitigate it, and will transfer directly to U.S. cities such as Seattle, WA, Los Angeles, CA, Memphis, TN, and Charleston, SC.

The scope of this research project continues to grow beyond the bounds of our original NSF proposal. As such, the New Zealand Earthquake Commission (EQC) has already provided additional direct research funding (approximately $225k) to our team, with more field work and additional funding expected for later in 2013.

H. DESCRIPTION OF CURRENT UNSPONSORED/DEPARTMENTAL RESEARCH

The INTERPACIFIC Project (Intercomparison of methods for site parameter and velocity profile characterization).

The INTERPACIFIC project is a sub-project of the SIGMA and CASHIMA research projects [SIMGA: Seismic Ground Motion Assessment, funded by French and European enterprises (EDF, AREVA, CEA, ENEL); CASHIMA: funded by CEA (Commissariat à l'Energie Atomique et aux Energies Alternatives, Cadarache, France), ILL (Institute Laue Langevin, Grenoble, France) and ITER Organization (Cadarache, France)], which aims to assess the reliability/variability of seismic site characterization methods (borehole and surface wave methods) used for estimating shear wave velocity (Vs) profiles and corresponding lumped parameters (e.g., VS,30). The other expected outcome is to develop a set of guidelines for performing and interpreting surface wave tests.

I have been invited to serve on the international organizing/advisory committee for this project (I am the only U.S. member of this committee). Arrangements have already been made to collect and process borehole data (crosshole, downhole, suspension logging) at three sites in France and Italy. Plans have also been made to collect a broad range of active and passive surface wave data at each site. The surface wave processing and inversion will be done on a voluntary basis, without specific funding. However, we will organize two meetings in France and/or Italy for which travel and stay expenses of the foreign teams will be covered. The two workshops will allow for exchange and comparison of results and to share knowledge in order to write the guidelines for surface wave testing.

This research project dovetails perfectly with my CAREER/PECASE research and my NSF-funded deep seismic profiling work in New Zealand. Furthermore, it has given me the opportunity to interact with leading researchers in my field of study from European institutions such as The University of Grenoble (Grenoble, France) and the University of Potsdam (Munich, Germany). These new colleagues have already had an important impact on the direction and trajectory of my research program.

Part 5: Professional Development

A. Short Courses None

B. Workshops

Pacific Earthquake Engineering Research Center (PEER) TSRP Liquefaction Workshop, Berkeley, CA, April 24, 2013 (invited and presented).

C. Technical Conferences

International Conference on Earthquake Geotechnical Engineering: From Case History to Practice - in honour of Professor Kenji Ishihara, Istanbul, Turkey, June 17-19, 2013 (presented).

D. Meetings

Quake Summit 2013 – NEES Annual Meeting, Reno, NV, August 8, 2013 (presented).

U.S. Geological Survey (USGS) NEHRP proposal review panel for the Central and Eastern U.S. (CEUS) focus area, Golden, CO, August 20-21, 2013 (panel member).

Part 6: Engineering Recognition

A. AWARDS & HONORS

Presidential Early Career Award for Scientists and Engineers (PECASE); 2012

B. LISTINGS None

Part 7: Professional Community Service

Part 8: Professional Experience

A. PROFESSIONAL REGISTRATION

Current: Registered Professional Engineer, State of Arkansas, PE Serial Number 14249

B. CONSULTING

(Number of Days, Company)

Tonkin and Taylor, Ltd., Christchurch, New Zealand (approximately 7 days)

Department of Civil, Architectural and Environmental Engineering

Name:	**Brady R. Cox**	Academic Year Ending:	**31 Aug 2013**
Rank:	**Assistant Professor**	Report Date:	**10/1/2013**
Endowed Position			
PE Status	**State of Arkansas, PE Serial Number 14249**	Faculty Signature:	

WORK EXPERIENCE YEARS

Years in Rank at UT: 1 Years Teaching Experience: 7 Years Other Experience: 0

GRADUATE STUDENT SUPERVISION (*In UT career total only, count each co-supervised student as 0.5)

M.S. Students:	12-13	M.S. Graduated:	12-13	UT CAREER TOTAL*
# of students supervised:	1	# of students supervised:	0	MS Graduated: 0
# of students co-supervised:	0	# of students co-supervised:	0	
Ph.D. Students:	—	Ph.D. Graduated:	—	PhD Graduated: 1
# of students supervised:	4	# of students supervised:	1	
# of students co-supervised:	0	# of students co-supervised:	0	

TEACHING

Teaching Evaluations

Semester	Course Number	Number of Students	Instructor Rating	Course Rating
Fall	CE 357	43	4.3	3.5
Spring	CE 387R	26	4.4	4.1
Summer				

CONTRIBUTIONS TO TECHNOLOGY

	12-13	CAREER TOTAL
Refereed Archival Journals Papers in Print:	3	20
Refereed Archival Journal Papers Accepted or In Press:	1	–
Refereed Archival Journal Papers Under Review:	1	–
Refereed Conference Proceedings:	1	31
Nonrefereed Publications:	0	0
Books Authored or Co-Authored:	0	0
Books Edited or Co-Edited:	0	0
Book Chapters Authored or Co-Authored:	0	0
Oral Presentations:	6	49
Patents:	0	0

Copyrighted Software Packages:	0	0

GRANTS AND CONTRACTS

	12-13 Only	SIX-YEAR TOTAL (06-12)
Number of Projects (New and Continuing):	5	16
Total Awarded to all Projects: $(K's) (new & continuing)	$2,185K	$3,758K
Your Share Awarded: $(K's) (new & continuing)	$1,253K	$2,520K
Your Share Spent:	$324.7K	----------

Name
Title

Civil, Architectural and Environmental Engineering

COMMITTEES in 12-13

	MEMBER	CHAIR
UT Department and College:	2	0
All University:	0	0
Professional and Technical:	7	0

ENGINEERING RECOGNITION IN 12-13

- Presidential Early Career Award for Scientists and Engineers (PECASE); 2012

FACULTY PARTICIPATION IN ACADEMIC EVENTS IN 12-13

Participated in the following academic events:

- College of Engineering, Graduation Ceremony, December 2012
- College of Engineering, Graduation Ceremony, May 2013

HIGHLIGHTS OF INDIVIDUAL ACCOMPLISHMENTS FOR 12-13

- I was recognized by President Barack Obama as one of 96 recipients of the Presidential Early Career Awards for Scientists and Engineers (PECASE). The award activities included a ceremony at the Smithsonian Institution and a reception with President Obama at the White House. The PECASE award is the highest honor bestowed by the U.S. Government on science and engineering professionals in the early stages of their independent research careers.
- I graduated my first Ph.D. student (Clinton M. Wood) and saw him placed as a tenure-track faculty member at the University of Arkansas. Between his M.S. and Ph.D. degrees, we co-authored seven peer-reviewed journal articles and nine peer-reviewed conference proceedings, with several more accepted for publication.
- I was PI or Co-PI on $395,650 of new research funding from NSF. This NSF funded research led to an additional $223,518 of funding from the New Zealand Earthquake Commission (EQC)/Tonkin and Taylor, Ltd.
- I spent approximately six weeks in Christchurch, New Zealand collecting experimental data associated with the geotechnical earthquake research funding noted above. This funding also allowed me and my colleague (Kenneth H. Stokoe, II) to provide international research experiences for five of our graduate students.
- I was invited to join the international INTERPACIFIC Project Committee (Intercomparison of methods for site parameter and velocity profile characterization). A sub-project of the SIGMA and CASHIMA research projects [SIMGA: Seismic Ground Motion Assessment, funded by French and European enterprises (EDF, AREVA, CEA, ENEL); CASHIMA: funded by CEA (Commissariat à l'Energie Atomique et aux Energies Alternatives, Cadarache, France), ILL (Institute Laue Langevin, Grenoble, France) and ITER Organization (Cadarache, France)].
- I established new international research collaborations with faculty from the University of Grenoble (France), Potsdam University (Germany) and the University of Canterbury (New Zealand).
- I was appointed as an Associate Editor for the ASCE *Journal of Geotechnical and Geoenvironmental Engineering*.
- My earthquake research in New Zealand was featured on the University of Texas homepage banner and received coverage from media outlets such as The Weather Channel, The New Zealand Herald and Alcade: The Official Publication of the Texas Exes.
- Invited speaker at the Pacific Earthquake Engineering Research Center (PEER) TSRP Liquefaction Workshop, Berkeley, CA.

Faculty Annual Report for Year End August 31, 2014

Brady R. Cox, Ph.D., P.E.

Assistant Professor

Civil, Architectural, and Environmental Engineering Department

9/19/14

Part 1: Teaching Activities

A. COURSES TAUGHT:

SEMESTER TAUGHT		COURSE NO.		COURSE NAME	NO. SECTIONS/STUDENTS	
Fall	2013	CE	397	Geotech Engr Seminar (Underground Openings)	1	10
Spring	2014	CE	311K	Intro to Computer Methods	2	28
Spring	2014	CE	357	Geotechnical Engineering	6	43

Individual Instructions

SEMESTER TAUGHT		COURSE NO.		COURSE NAME	NO.STUDENTS	
Fall	2013	CE	397S	14 – Master's Research	1	
Fall	2013	CE	397S	15 – Dissertation Research	1	
Fall	2013	CE	697S	15 – Dissertation Research	1	
Fall	2013	CE	699R	Dissertation	1	
Fall	2013	CE	398D	Departmental Report	1	
Spring	2014	CE	397S	14 – Master's Research	1	
Spring	2014	CE	697S	15 – Dissertation Research	1	
Spring	2014	CE	999R	Dissertation	1	
Summer	2014			Data Not Available Yet		

B. GRADUATE STUDENT RESEARCH

Supervisor, PhD Dissertations

STUDENT	DEPARTMENT	GRAD. DATE	AREA
Shawn Giffiths	CAEE	In Progress	GEO
Trenton Ellis	CAEE	In Progress	GEO
Andrew Stolte	CAEE	In Progress	GEO
David Teague	CAEE	In Progress	GEO

Supervisor, MS Theses/Reports

STUDENT	DEPARTMENT	GRAD. DATE	AREA
David Teague	CAEE	Spring 2014	GEO

Co-Supervisor, PhD Dissertations

STUDENT	DEPARTMENT	GRAD. DATE	AREA

None

CO-Supervisor, MS Theses/Reports

STUDENT	DEPARTMENT	GRAD. DATE	AREA

None

Member PhD Committees

STUDENT	DEPARTMENT	GRAD. DATE	AREA
Georgios Zalachoris	CAEE	Spring 2014	GEO
Yubing Wang	CAEE	Spring 2014	GEO
Michael Plaisted	CAEE	In Progress	GEO
Greg Dellinger	CAEE	In Progress	GEO

Reader, MS Committees

STUDENT	DEPARTMENT	GRAD. DATE	AREA
Grant Martin	CAEE	Spring 2014	GEO
Jeremy Faker	CAEE	Spring 2014	GEO
Julia Roberts	CAEE	Spring 2014	GEO

Sungmoon Hwang	CAEE	In Progress	GEO

C. OTHER RESEARCH SUPERVISION

I have supervised three undergraduate students for NSF-funded REU research associated with my CAREER/PECASE project.

D. ADDITIONAL TEACHING ACTIVITIES

None

Part 2: Administrative And Committee Assignments

A. ADMINISTRATIVE COMMITTEES None

B. UNIVERSITY COMMITTEES

University None

College None

Department

CAEE Department Chair Search Committee

Curriculum Committee

Distinguished Lecture Series Committee

C. OUTSIDE COMMITTEES

International

Member, INTERPACIFIC Project Committee (Intercomparison of methods for site parameter and velocity profile characterization). A sub-project of the SIGMA and CASHIMA research projects [SIMGA: Seismic Ground Motion Assessment, funded by French and European enterprises (EDF, AREVA, CEA, ENEL); CASHIMA: funded by CEA (Commissariat à l'Energie Atomique et aux Energies Alternatives, Cadarache, France), ILL (Institute Laue Langevin, Grenoble, France) and ITER Organization (Cadarache, France)].

National

Associate Editor, ASCE *Journal of Geotechnical and Geoenvironmental Engineering*

Member, Geo-Engineering Extreme Events Reconnaissance (GEER) Association

Member, Network for Earthquake Engineering Simulation (NEES), Data Curation Subcommittee

Member, ASCE Geo-Institute, Earthquake Engineering and Soil Dynamics Committee

Member, ASCE Geo-Institute, Geophysical Engineering Committee

Member, ASTM, Committee D18 on Soil and Rock

State None

Part 3: Contributions to Technology

A. REFEREED ARCHIVAL JOURNALS

In Print (2):

1. Green, R.A., Cubrinovski, M., Cox, B.R., Wood, C., Wotherspoon, L., Bradley, B., Maurer, B. (2014). "Select Liquefaction Case Histories from the 2010-2011 Canterbury Earthquake Sequence," *Earthquake Spectra*, 30(1), pp. 131-153.
2. Wotherspoon, L.M., Orense R.P., Jacka, M., Green, R.A., Cox, B.R., Wood, C.M. (2014). "Seismic Performance of Improved Ground Sites during the 2010-2011 Canterbury Earthquake Sequence," *Earthquake Spectra*, 30(1), pp. 111-129.

Accepted (0):

Under Review (2):

1. Wood, C.M. and Cox, B.R. (in review; 2014 expected). "Experimental Dataset of Mining-Induced Seismicity for Studies of Full-Scale Topographic Effects," *Earthquake Spectra*.
2. McGann, C.R., Bradley, B.A., Wotherspoon, L.M., Cox, B.R. (in review; 2014 expected). "Comparison of a Christchurch-Specific CPT-Vs Correlation and Vs Derived from Surface Wave Analysis for Strong Motion Station Velocity Characterization," *Bulletin of the New Zealand Society for Earthquake Engineering*.

B. REFEREED CONFERENCE PROCEEDINGS (2):

1. Wood, C.M., Ellis, T.B., Teague, D.P., Cox, B.R. (2014). "Comprehensive Analysis of the UTexas1 Surface Wave Dataset," ASCE Geo-Congress 2014: Geo-Characterization and Modeling for Sustainability, Atlanta, GA, February 23-26, 2014, pp. 820-829.
2. Cox, B.R., Wood, C.M., Teague, D.P. (2014). "Synthesis of the UTexas1 Surface Wave Dataset Blind-Analysis Study: Inter-Analyst Dispersion and Shear Wave Velocity Uncertainty," ASCE Geo-Congress 2014: Geo-Characterization and Modeling for Sustainability, Atlanta, GA, February 23-26, 2014, pp. 850-859.

C. NON-REFEREED PAPERS None

D. BOOKS AUTHORED/CO-AUTHORED None

E. BOOKS EDITED/CO-EDITED None

F. BOOKS CHAPTERS None

G. BOUND TECHNICAL REPORTS None

H. ORAL PRESENTATIONS (8):

National/International Meetings or Conferences (5):

1. Cox, B.R. "Synthesis of the UTexas1 Surface Wave Dataset Blind-Analysis Study: Inter-Analyst Dispersion and Shear Wave Velocity Uncertainty," presented at ASCE Geo-Congress 2014: Geo-Characterization and Modeling for Sustainability, Atlanta, GA, February 23-26, 2014.
2. Cox, B.R. (Invited) "Analysis of the InterPacific Surface Wave Datasets: Significant Results and Conclusions," presented at the 1st INTERPACIFIC Workshop, Torino, Italy, 22-23 May, 2014.
3. Cox, B.R. (Invited) "Analysis of the InterPacific Borehole Methods Datasets: Relevant Results and Conclusions," presented at the 1st INTERPACIFIC Workshop, Torino, Italy, 22-23 May, 2014.
4. Cox, B.R. "Developing Reliable Deep Vs Profiles Beneath Christchurch by Merging Large Active-Source and Ambient-Wavefield Surface Wave Methods," presented at the 10th U.S. National Conference on Earthquake Engineering, Anchorage, AK, 21-25 July, 2014.
5. Cox, B.R. (Invited) "NEES Helping to Build a Resilient Christchurch: Towards Deep Basin Characterization and Liquefaction Mitigation," presented at the 10th U.S. National Conference on Earthquake Engineering NEES Luncheon, Anchorage, AK, 21-25 July, 2014.

Regional/State/Local Meetings or Conferences (3):

1. Cox, B.R. (Invited) "Why the Palace Fell - The 2010 Haiti Earthquake: from Reconnaissance to Reconstruction" presented at St. Stephen's Episcopal School, Austin, TX, February 13, 2014.
2. Cox, B.R. (Invited) "Deep Vs Profiling for Dynamic Characterization of Christchurch, New Zealand: Towards Reliably Merging Large Active-Source and Ambient-Wavefield Surface Wave Methods," presented at the University of Texas Institute for Geophysics Seminar, Austin, TX, March 28, 2014.
3. Cox, B.R. (Invited) "My Experiences as an Earthquake Engineer," presented at Elsa England Elementary School, Round Rock, TX, March 21, 2014.

I. PATENTS None

J. COPYRIGHTED SOFTWARE None

K. OTHER None

Part 4: Research Activities/Grants & Contracts

A. NEW PROJECTS FUNDED-INDIVIDUAL

Project Title:

Sponsor:

Begin/End Dates:

Total Award:

Budget for 13-14:

Expended for 13-14:

Reporting Center:

B. NEW PROJECTS FUNDED—JOINT

Project Title:

Sponsor:

Principal Investigator:

Co-Principal Investigators:

Begin/End Dates:

Award (Total):

Award (Your Share):

12-13 Budget (Total):

12-13 Budget (Your Share):

12-13 Expended (Your Share):

Reporting Center:

C. CONTINUING PROJECTS—INDIVIDUAL

Project Title: *CAREER/PECASE: Revolutionizing Surface Wave Methods for Engineering Analyses – from Deterministic and Incoherent to Probabilistic and Standardized (DIPS)*

Sponsor:	NSF
Begin/End Dates:	July 2011/June 2016
Total Award:	$421,600
Budget for 13-14:	
Expended for 13-14:	$107,931
Reporting Center:	GEC/CAEE

Project Title:	*RAPID: Deep Shear Wave Velocity Profiling for Seismic Characterization of Christchurch, NZ - Reliably Merging Large Active-Source and Passive-Wavefield Surface Wave Methods*
Sponsor:	NSF
Begin/End Dates:	December 2012/ November 2014
Total Award:	$197,684
Budget for 13-14:	
Expended for 13-14:	$53,721
Reporting Center:	GEC/CAEE

D. CONTINUING PROJECTS—JOINT

Project Title:	*NEES-CR: Topographic Effects in Strong Ground Motion – From Physical and Numerical Modeling to Design*
Sponsor:	NSF/Virginia Tech
Principal Investigator:	Adrian Rodriguez-Marek (VT)
Co-Principal Investigators:	Brady R. Cox (UT), Dominic Assimaki (GT), Joseph Wartman (UW)
Begin/End Dates:	October 2009/September 2014
Award (Total):	$1,144,593
Award (Your Share):	$211,857
13-14 Budget (Total):	
13-14 Budget (Your Share):	
13-14 Expended (Your Share):	$10,634

Reporting Center:	GEC/CAEE
Project Title:	*RAPID: Field Investigations of Shallow Ground Improvement Methods for Inhibiting Liquefaction Triggering; Christchurch, New Zealand*
Sponsor:	NSF
Principal Investigator:	Kenneth H. Stokoe, II
Co-Principal Investigators:	Brady R. Cox
Begin/End Dates:	June 2013/May 2014
Award (Total):	$197,966
Award (Your Share):	$98,983
13-14 Budget (Total):	
13-14 Budget (Your Share):	
13-14 Expended (Your Share):	$36,458
Reporting Center:	GEC/CAEE

Project Title:	*Field Investigations of Shallow Ground Improvement Methods for Inhibiting Liquefaction Triggering; Christchurch, New Zealand*
Sponsor:	New Zealand Earthquake Commission/Tonkin and Taylor Ltd., Christchurch, NZ
Principal Investigator:	Kenneth H. Stokoe, II
Co-Principal Investigators:	Brady R. Cox
Begin/End Dates:	June 2013/May 2014
Award (Total):	$302,019
Award (Your Share):	$151,021
13-14 Budget (Total):	
13-14 Budget (Your Share):	
13-14 Expended (Your Share):	~ $65,000 (exact amount unknown at the moment)
Reporting Center:	GEC/CAEE

E. RESEARCH PROPOSALS SUBMITTED—INDIVIDUAL

Project Title:

Sponsor:

Begin/End Dates:

Requested Budget (Total):

Proposal Status: Under Review, Award Pending, Rejected

Reporting Center:

F. RESEARCH PROPOSALS SUBMITTED—JOINT

Project Title: Early Career: Development of Meso-Scale, Capacitively-Transduced Seismic Sensors for Earth Sciences

Sponsor: NSF

Principal Investigator: N. Hall

Co-Principal Investigators: B. Cox and N. Sun

Begin/End Dates:

Requested Budget (Total): $599,359

Proposal Status: Rejected

Reporting Center: GEC/CAEE

G. DESCRIPTION OF CURRENT SPONSORED RESEARCH

CAREER/PECASE: Revolutionizing Surface Wave Methods for Engineering Analyses – from Deterministic and Incoherent to Probabilistic and Standardized (DIPS) **(PI; NSF)**

Surface wave methods (SWM's) have become fully entrenched as powerful tools in geotechnical site investigation over the past decade, and their end result - a subsurface profile of small-strain shear modulus/shear wave velocity (V_s) - is used as a key input parameter in many engineering analyses. The expanding use of SWM's is driven by the desire to "reach" within the earth and retrieve accurate and meaningful engineering parameters without the need for borings. Traditionally, SWM's have been used to provide a single, deterministic V_s profile for each site tested, without consideration given to measurement/dispersion uncertainty and how it propagates forward through the inversion process used to estimate V_s. However, as the profession moves toward probabilistic design and performance-based engineering, the inability to quantify uncertainty in V_s from SWM's has been exposed as a major impediment to future progress.

This research (aimed at "smoothing-out the dips" in SWM's) involves: (1) quantifying measurement/dispersion uncertainty in SWM's so that Monte Carlo-based inversions can be used to propagate this uncertainty forward into a suite of acceptable V_s profiles with confidence intervals on layer thickness and velocity (i.e., advancing

from deterministic to probabilistic), and (2) developing standards for SWM's applied to solving engineering problems (i.e., advancing from incoherent recommendations to coherent standards). The DIPS plan is guided by the vision to collect and analyze a unique, large and freely-shared set of experimental data at key benchmark sites across the globe using the four main types of SWM's with systematically varied acquisition parameters. Meaningful dispersion uncertainty will be evaluated for each set of acquisition parameters using newly-proposed methods. Intra-method variability in dispersion estimates will then be examined and the set of parameters with the lowest uncertainty selected to anchor the development of standards. With meaningful estimates of dispersion uncertainty, Monte Carlo inversions will be used to establish confidence intervals for V_s layer thickness and velocity, resulting in fully probabilistic results that can be incorporated into subsequent performance-based analyses.

Over the past year, I have collected the first of four planned benchmark datasets (the UTexas1 Surface Wave Dataset) at a site in Christchurch, New Zealand. This dataset was shared with 10 expert analysts from around the globe. Each expert was asked to process the dataset and document their results in a paper submitted to a conference session I have organized at the ASCE 2014 Geo-Congress on Geo-Characterization and Modeling for Sustainability, to be held in Atlanta, GA on February 23-26, 2014. I have used these results to write a synthesis paper for the session that documents inter-analyst frequency-dependent uncertainty in dispersion estimates and depth-dependent uncertainty in Vs. The focus of this study is not about evaluating how many/which analysts obtain the "correct" answer, but rather on quantifying the range of answers one might expect from different analysts attempting to characterize the same site. This is one of the key goals of my CAREER/PECASE research. Plans are currently being formulated to collect an additional benchmark dataset at a site in either France or Italy this fall.

NEES-CR: Topographic Effects in Strong Ground Motion – From Physical and Numerical Modeling to Design
(Co-PI; NSF through Virginia Tech; PI Adrian Rodriguez-Marek)

Topographic effects refer to the modification and amplification of seismic ground motion in the vicinity of topographic features such as hillsides, ridges, and canyons. Because tectonics and topography are closely related, most seismically active regions of the world are marked by significant topographic relief. In recent decades, population growth and scarcity of undeveloped metropolitan land have changed urban land use patterns and placed an increasing number of people and infrastructure assets in areas susceptible to topographic effects during earthquakes. Although it is widely recognized that topographic amplification can elevate seismic risk, there is currently no consensus on how to reliably quantify its effects. Lack of consensus has precluded development of acceptable guidelines on how to account for this phenomenon in practice, thus leaving an important factor contributing to seismic hazard unaccounted for in routine design. Until now, a major impediment towards understanding and realistically modeling topographic effects has been the lack of a statistically significant number of seismic recordings from densely instrumented sites with topographic features. Moreover, while existing theoretical models are generally capable of qualitatively predicting the effects of irregular topographic features on seismic ground motion, there is still significant quantitative disagreement between predictions and observations. This research addresses the problem of topographic amplification with a study that includes a comprehensive and integrated program of experimental simulations, field measurements, empirical data analysis, and numerical modeling.

My responsibilities in this project have centered around collecting field measurements of topographic amplification. We have chosen to investigate topographic effects using frequent, shallow and predictable seismicity induced by underground longwall coal mining in central-eastern Utah, USA. These mining activities produce small magnitude earthquakes (generally ML<4.0) on a consistent basis that have been shown to resemble the double-couple shear mechanisms of traditional earthquake ground motions. Locally-dense arrays of seismometers deployed over various topographic features were used to passively monitor seismic

energy produced by mining-induced implosions and/or stress redistribution in the subsurface. The research consisted of two separate studies: an initial feasibility experiment (Phase I) followed by a larger-scale main study (Phase II). Over 50 distinct, small- magnitude (M_L < 1.6) seismic events were identified in each phase. These events were analyzed for topographic effects in the time domain using the Peak Ground Velocity (PGV), and in the frequency domain using the Standard Spectral Ratio (SSR) method, the Median Reference Method (MRM), and the Horizontal-to-Vertical Spectral Ratio (HVSR) method. The polarities of the horizontal ground motions were also visualized using directional analyses. The various analysis methods were compared to assess their ability to estimate amplification factors and determine the topographic frequencies of interest for each feature instrumented. The MRM was found to provide the most consistent, and presumably accurate, estimates of the amplification factor and frequency range for topographic effects.

Results from this study clearly indicated that topographic amplification of ground motions does in fact occur. These amplifications were very frequency dependent, and the frequency range was correctly estimated in many, but not all, cases using simplified, analytical methods based on the geotechnical and geometrical properties of the topography. Amplifications in this study were found to generally range from 2 to 3 times a reference/baseline site condition, with some complex 3D features experiencing amplifications as high as 10. Maximum amplifications occurred near the crest of topographic features with slope angles greater than approximately 15 degrees, and the amplifications were generally oriented in the direction of steepest topographic relief, with some dependency on wave propagation direction.

My Ph.D. student dedicated to this project (Clinton M. Wood) graduated in August 2013 and accepted a tenure-track faculty position at the University of Arkansas. We are currently working on several journal articles related to our research on topographic effects. Furthermore, we continue to interact with the research team members from other institutions to fulfill the ultimate goals of the project. We believe this work will result in: (i) an order-of-magnitude increase in the amount of high quality data on topographic amplification, (ii) greater fundamental understanding of this phenomenon, (iii) quantification of topographic effects on ground motions, (iv) improved attenuation relationships that account for topographic amplification, and (v) widely adopted guidelines and provisions to account for this seismic hazard in practice. Ultimately, this work will allow seismic risk to be more effectively managed in terms of ground motion quantification and site response prediction.

RAPID: Deep Shear Wave Velocity Profiling for Seismic Characterization of Christchurch, NZ - Reliably Merging Large Active-Source and Passive-Wavefield Surface Wave Methods **(PI; NSF)**

In 2010-2011, the city of Christchurch, New Zealand was devastated by a series of powerful earthquakes, the most destructive being the 22 February 2011 M_w6.2 Christchurch Earthquake. During this event, the seismic demands imposed on the built environment at many locations in the city were higher than engineering design levels, causing severe structural damage and collapse, especially within the central business district (CBD). Ultimately, the Christchurch Earthquake resulted in 181 casualties, thousands of injuries, and widespread soil liquefaction that caused billions of dollars in damage to buildings, homes and infrastructure. The entire CBD was cordoned-off following this event and remained closed to the public for over two years. An estimated 2400 out of 3000 structures have been, or currently are being, demolished as a result. A network of 19 seismic recording stations in the greater Christchurch area captured an extensive and unique set of ground motions (GM) during the 2010-2011 earthquakes. Potentially, these GM can be used for back-analyses aimed at understanding the spatial variability of the ground shaking (particularly site and basin effects), followed by accurate forward-estimates aimed at quantifying the amplitude and frequency content of future design GM. However, detailed GM analyses cannot presently be conducted because no information exists on the shear wave velocity (V_s) structure of the greater-than-400-m deep interlayered sand and gravel deposits that underlie Christchurch.

The thrust of this research has been to conduct deep (>400 m) V_s profiling at 15 key sites in Christchurch, New Zealand to aid in important seismic GM response analyses for rebuilding of the city. The only way to economically and rapidly obtain V_s estimates to these great depths is through non-intrusive surface wave testing. However, there is currently a great deal of uncertainty involved in the passive-wavefield techniques most commonly utilized for deep V_s profiling. Therefore, a unique study will be conducted to compare and merge data from large active-source and passive-wavefield surface wave methods over an extended frequency/wavelength range, which will allow robust determination of data uncertainty and relative bias. Over the past year, active-source surface wave measurements have been conducted using one of the large and unique NEES@UTexas mobile, servo-hydraulic shakers and up to24 1-Hz geophones, while passive-wavefield data has been collected using intermediate- and large-diameter circular sensor arrays (60-, 200- and 400-m diameters) composed of 10 broadband seismometers. This research has tripled the available comparisons between large active-source and passive-wavefield surface wave methods utilized for deep V_s profiling. These comparisons are needed before confidence in utilizing passive-wavefield methods independently can be achieved. Therefore, the merits of this work include: (a) the collection and interpretation of a one-of-a-kind dataset that can be used for evaluating the reliability involved with merging large active-source and passive-wavefield surface wave methods for deep V_s profiling, and (b) the advancement in accurate ground motion prediction for deep sedimentary basins made possible by these deep V_s profiles through analysis of a unique set of damaging GM records from multiple seismic events. Progress made on both of these issues will directly impact earthquake engineering studies in the U.S., New Zealand, and throughout the world.

This research has served to strengthen my international research collaborations New Zealand colleagues and other important seismic researchers throughout the U.S. Additionally, I was able to provide four different U.S. graduate students with rewarding international travel experiences that will serve to balance their technical education and expose them to the globally-connected problems that still exist in earthquake engineering. Furthermore, one of the key benchmark surface wave datasets for my CAREER/PECASE research (as discussed above) was obtain in New Zealand during the field experiments conducted during this project.

RAPID: Field Investigations of Shallow Ground Improvement Methods for Inhibiting Liquefaction Triggering; Christchurch, New Zealand **(Co-PI; NSF; PI Kenneth H. Stokoe II)**

As noted above, in 2010-2011, the city of Christchurch, New Zealand was devastated by a series of powerful earthquakes, including six significant events. The February 2011 Christchurch Earthquake (movement magnitude, M_w, 6.2) generated the largest ground motions in the city, with horizontal peak ground accelerations between 0.37 and 0.52 g. The 2010-2011 earthquakes caused repeated liquefaction throughout the suburbs of Christchurch. Some key observations and impacts are that: (1) liquefaction was particularly extensive and damaging along the meandering loops of the Avon River, now designated as part of the "Red Zone" (zone where residential structures will not be rebuilt), (2) more than 7,000 residential properties are being abandoned in the "Red Zone" because the damage is beyond economic repair, (3) an estimated additional 15,000 properties were affected by liquefaction, and (4) the total economic loss is estimated to be from 25 to 30 billion NZ dollars (or 15 to 18% of New Zealand's GDP). One critical problem facing Christchurch and the Canterbury region is rebuilding on land that remains at risk of liquefaction in future earthquakes. This problem arises after nearly all earthquakes and little information exists on ground improvement methods that can be used to increase the resilience of residential structures and low-rise buildings in future earthquakes.

Facing this critical, time-sensitive problem, the New Zealand authorities have contributed over $2M (NZ) to a project involving full-scale field test trials of shallow ground improvement methods. The goal is to determine if, and which, ground improvement methods achieve the objectives of inhibiting liquefaction triggering in the improved ground and are cost-effective measures. This new knowledge, which is applicable in the U.S. and worldwide, is rapidly needed as part formulating the path forward in rebuilding the infrastructure in

Christchurch and the Canterbury region. The liquefaction testing is currently being conducted using the large mobile shaker, called T-Rex, that is operated by NEES@UTexas. T-Rex is being used to simulate a wide range of controlled earthquake shaking levels at the ground improvement sites. This unique opportunity exists because T-Rex was already in Christchurch as a result of an earlier NSF project involving deep seismic profiling (as documented above).

This research includes the collection and interpretation of a one-of-a-kind dataset that can be used in the design of shallow ground improvement methods to inhibit liquefaction triggering of saturated soils. This knowledge currently does not exist but has numerous applications in earthquake-prone areas in the U.S. and worldwide for residential structures and low-rise commercial buildings. This new knowledge will help develop a more comprehensive understanding of soil liquefaction risk and ways to mitigate it, and will transfer directly to U.S. cities such as Seattle, WA, Los Angeles, CA, Memphis, TN, and Charleston, SC.

The scope of this research project continues to grow beyond the bounds of our original NSF proposal. As such, the New Zealand Earthquake Commission (EQC) has already provided additional direct research funding (approximately $225k) to our team, with more field work and additional funding expected for later in 2013.

H. DESCRIPTION OF CURRENT UNSPONSORED/DEPARTMENTAL RESEARCH

The INTERPACIFIC Project (Intercomparison of methods for site parameter and velocity profile characterization).

The INTERPACIFIC project is a sub-project of the SIGMA and CASHIMA research projects [SIMGA: Seismic Ground Motion Assessment, funded by French and European enterprises (EDF, AREVA, CEA, ENEL); CASHIMA: funded by CEA (Commissariat à l'Energie Atomique et aux Energies Alternatives, Cadarache, France), ILL (Institute Laue Langevin, Grenoble, France) and ITER Organization (Cadarache, France)], which aims to assess the reliability/variability of seismic site characterization methods (borehole and surface wave methods) used for estimating shear wave velocity (Vs) profiles and corresponding lumped parameters (e.g., VS,30). The other expected outcome is to develop a set of guidelines for performing and interpreting surface wave tests.

I have been invited to serve on the international organizing/advisory committee for this project (I am the only U.S. member of this committee). Arrangements have already been made to collect and process borehole data (crosshole, downhole, suspension logging) at three sites in France and Italy. Plans have also been made to collect a broad range of active and passive surface wave data at each site. The surface wave processing and inversion will be done on a voluntary basis, without specific funding. However, we will organize two meetings in France and/or Italy for which travel and stay expenses of the foreign teams will be covered. The two workshops will allow for exchange and comparison of results and to share knowledge in order to write the guidelines for surface wave testing.

This research project dovetails perfectly with my CAREER/PECASE research and my NSF-funded deep seismic profiling work in New Zealand. Furthermore, it has given me the opportunity to interact with leading researchers in my field of study from European institutions such as The University of Grenoble (Grenoble, France) and the University of Potsdam (Munich, Germany). These new colleagues have already had an important impact on the direction and trajectory of my research program.

Part 5: Professional Development

A. Short Courses

Enhanced In-Situ Testing for Geotechnical Analyses and Foundation Design, Atlanta, GA, June 3-4, 2014. (participant)

B. Workshops

1st INTERPACIFIC Project Workshop, Torino, Italy, May 22-23, 2014 (organizing committee and presented).

C. Technical Conferences

ASCE Geo-Congress 2014: Geo-Characterization and Modeling for Sustainability, Atlanta, GA, February 23-26, 2014. (organized session and presented).

10th U.S. National Conference on Earthquake Engineering, Anchorage, AK, 21-25 July, 2014. (presented)

D. Meetings

Part 6: Engineering Recognition

A. AWARDS & HONORS

NEES Outstanding Contributor Award – Most Influential Geotechnical Research Project; 2014 Co-PI with Kenneth H. Stokoe PI.

B. LISTINGS None

Part 7: Professional Community Service

K-12 Outreach

1. Cox, B.R. (Invited) "Why the Palace Fell - The 2010 Haiti Earthquake: from Reconnaissance to Reconstruction" presented at St. Stephen's Episcopal School, Austin, TX, February 13, 2014.
2. Cox, B.R. (Invited) "My Experiences as an Earthquake Engineer," presented at Elsa England Elementary School, Round Rock, TX, March 21, 2014.

Part 8: Professional Experience

A. PROFESSIONAL REGISTRATION

Current: Registered Professional Engineer, State of Arkansas, PE Serial Number 14249

B. CONSULTING

(Number of Days, Company)

Tonkin and Taylor, Ltd., Christchurch, New Zealand (approximately 5 days)

Department of Civil, Architectural and Environmental Engineering

Name:	**Brady R. Cox**	Academic Year Ending:	**31 Aug 2014**
Rank:	**Assistant Professor**	Report Date:	**8/1/2014**
Endowed Position			
PE Status	**State of Arkansas, PE Serial Number 14249**	Faculty Signature:	

WORK EXPERIENCE YEARS

Years in Rank at UT: 2 Years Teaching Experience: 8 Years Other Experience: 0

GRADUATE STUDENT SUPERVISION (*In UT career total only, count each co-supervised student as 0.5)

	13-14		13-14	UT CAREER TOTAL*	
M.S. Students:		M.S. Graduated:		MS Graduated:	1
# of students supervised:	1	# of students supervised:	1		
# of students co-supervised:	0	# of students co-supervised:	0		
Ph.D. Students:	—	Ph.D. Graduated:	—	PhD Graduated:	1
# of students supervised:	4	# of students supervised:	0		
# of students co-supervised:	0	# of students co-supervised:	0		

TEACHING

Teaching Evaluations

Semester	Course Number	Number of Students	Instructor Rating	Course Rating
Fall	CE 397	10	4.0	3.1
Spring	CE 311K	28	4.7	4.2
	CE 357	43	4.5	4.0
Summer				

CONTRIBUTIONS TO TECHNOLOGY

	13-14	CAREER TOTAL
Refereed Archival Journals Papers in Print:	2	22
Refereed Archival Journal Papers Accepted or In Press:	0	–
Refereed Archival Journal Papers Under Review:	2	–
Refereed Conference Proceedings:	2	33
Nonrefereed Publications:	0	0
Books Authored or Co-Authored:	0	0
Books Edited or Co-Edited:	0	0
Book Chapters Authored or Co-Authored:	0	0
Oral Presentations:	8	57
Patents:	0	0

Copyrighted Software Packages:	0	0
GRANTS AND CONTRACTS		
	13-14 Only	SIX-YEAR TOTAL (07-13)
Number of Projects (New and Continuing):	5	16
Total Awarded to all Projects: $(K's) (new & continuing)	$2,185K	$3,758K
Your Share Awarded: $(K's) (new & continuing)	$1,253K	$2,520K
Your Share Spent:	$273.7K	----------

Brady R. Cox, Ph.D, P.E.
Assistant Professor

Civil, Architectural and Environmental Engineering

COMMITTEES in 13-14		
	MEMBER	CHAIR
UT Department and College:	3	0
All University:	0	0
Professional and Technical:	7	0

ENGINEERING RECOGNITION IN 13-14

- NEES Outstanding Contributor Award – Most Influential Geotechnical Research Project; 2014 Co-PI with Kenneth H. Stokoe PI.

FACULTY PARTICIPATION IN ACADEMIC EVENTS IN 13-14

Participated in the following academic events:

- College of Engineering, Graduation Ceremony, May 2014

HIGHLIGHTS OF INDIVIDUAL ACCOMPLISHMENTS FOR 13-14

- Last year, I was PI or Co-PI on $395,650 of new research funding from NSF. This NSF funded research led to an additional $302,019 of funding from the New Zealand Earthquake Commission (EQC)/Tonkin and Taylor, Ltd. This year, I have leveraged that funding to publish two refereed journal articles and two refereed conference papers from my research in New Zealand, with an additional refereed journal article currently in review. I also used one of the datasets collected in New Zealand to organize a conference session at the 2014 ASCE GeoCongress focused on quantifying uncertainty in surface wave measurements via a blind analysis study. This session turned out to be very successful, with 10 international participants analyzing the dataset and documenting their results from the blind study.
- I was awarded the Network for Earthquake Engineering Simulation (NEES) Outstanding Contributor Award – Most Influential Geotechnical Research Project for 2014 with Kenneth H. Stokoe based on our NSF RAPID proposal "Field Investigations of Shallow Ground Improvement Methods for Inhibiting Liquefaction Triggering; Christchurch, New Zealand." Ken and I were both invited to speak at the 10th U.S. National Conference on Earthquake Engineering NEES Luncheon in Anchorage, AK on July 24, 2014. There were over 1,000 engineers, seismologists, geologists, and social scientists in the audience. This was an incredible platform to highlight the work we are doing at UT in geotechnical earthquake engineering.
- Last year, I was invited to join the international INTERPACIFIC Project Committee (Intercomparison of methods for site parameter and velocity profile characterization). A sub-project of the SIGMA and CASHIMA research projects [SIMGA: Seismic Ground Motion Assessment, funded by French and European enterprises (EDF, AREVA, CEA, ENEL); CASHIMA: funded by CEA (Commissariat à l'Energie Atomique et aux Energies Alternatives, Cadarache, France), ILL (Institute Laue Langevin, Grenoble, France) and ITER Organization (Cadarache, France)]. I am the only U.S. representative on the organizing committee. We planned and held our 1st workshop this year in Torino, Italy. This project dovetails perfectly with my NSF CAREER/PECASE research project and has allowed me to add a unique international dimension to the work. At the 1st workshop, I was able to interact with a number of new colleagues from Australia, Japan, Switzerland, Greece, Italy and France.
- I taught CE311K for the first time in Spring 2014. As with all new courses, it was a lot of work. However, I received some great feedback from my students and one of my highest instructor ratings ever (4.7). This was a very rewarding experience.
- One of my M.S. students received an NSF Graduate Research Fellowship. He decided to stay here at UT and pursue his Ph.D. under my direction. This was a very exciting accomplishment that I was able to play a small role in. I now have four incredible Ph.D. students under my supervision.

2. TEACHING

Budget Council Statement

Prepared by Robert B. Gilbert

Evaluation of Dr. Cox's teaching was based on a review of his instructor surveys, peer reviews of his teaching, and a review of his teaching portfolio.

In his two years in rank as an Assistant Professor at The University of Texas at Austin, Dr. Cox has taught four different courses: two undergraduate courses and two graduate courses:

CE 357 Geotechnical Engineering. This undergraduate course is required of all students in Civil Engineering and Architectural Engineering and is normally taken in the junior year. This course represents the first exposure of students to soil as an engineering material and it is also a prerequisite for the two additional undergraduate courses in Geotechnical Engineering. Because this course is the only required geotechnical course, it is important for exposing new students to the field of geotechnical engineering.

CE 311K – Introduction to Computer Methods. This undergraduate course is required for all students in Civil Engineering and Architectural Engineering and is normally taken in the sophomore year. It is a core course that focuses on problem solving, numerical methods and computer programming.

CE 387R.2 – Soil and Rock Dynamics. This graduate course is an elective course taken by about half of the graduate students in geotechnical engineering. The course covers the basic theory and practice of soil and rock dynamics as applied to material characterization, earthquake engineering and foundation design for blasts and vibrations.

CE 397 – Underground Openings. This graduate course is an elective course that Dr. Cox developed and offered for the first time last fall. The course covers the theory and practice of designing and constructing underground openings including tunnels, shafts and galleries.

Over his two years here, Dr. Cox has taught three undergraduate classes, CE 357 twice and CE 311K once, and two graduate classes, CE 387R.2 once and CE 397 once. His teaching load is consistent with expectations within the Department and is similar to other faculty in our group. However, he has distinguished himself with his willingness to teach new courses (he had never taught courses similar to CE 311K and CE 397) and to develop a new graduate course (CE 397). Therefore, Dr. Cox has gone well beyond the expectations for a new faculty member.

Dr. Cox has performed very well as a teacher at The University of Texas at Austin. His instructor ratings are all greater than or equal to 4.0, and his average instructor ratings for undergraduate courses (4.5) and for graduate courses (4.2) both exceed the average instructor ratings for Assistant Professors in the Department and in the School of Engineering. In CE 357, his average instructor rating (4.4 in two offerings) exceeds the average for the professors who taught the course over the past three years (4.3 in ten offerings). In CE 311K, his instructor rating (4.7) exceeds significantly the average instructor rating for other professors teaching that course over the past three years (3.9 in thirteen offerings). His course ratings clearly reflect teaching new courses for the first time. His course rating increased from 3.5 the first time he taught CE 357 to

4.0 the second time he taught it. In the most recent semester, he received instructor ratings of 4.5 and 4.7 in his two undergraduate courses. His lowest course rating was for the new graduate course he developed (CE 397); we expect that this rating will improve significantly as he gets experience. A student from that class concluded, "Dr. Cox is a great professor, and did an excellent job with the course despite it being very unorganized. I am confident this will be a useful course, especially now that Dr. Cox has a feel for how to approach the material." Dr. Cox's performance here is consistent with his earlier performance in six years as an Assistant Professor at the University of Arkansas.

The peer evaluations for Dr. Cox are very positive and consistent with his student evaluations. One concludes "Based on Brady's personality and his teaching style, I expect he will be one of the best teachers in our department." The other concludes "We are fortunate to have him teaching undergraduate students in CAEE."

Dr. Cox's teaching portfolio is consistent with a trajectory toward excellence as a teacher. He creates homework and exam problems that challenge the students and give them opportunities to synthesize their understanding. He emphasizes the practical nature of civil engineering.

While in rank at The University of Texas at Austin, one Ph.D. student and one M.S. student have graduated under Dr. Cox's supervision. Previously at the University of Arkansas, Dr. Cox graduated six M.S. students.

We fully expect that Dr. Cox will become one of the top teachers in our department.

Teaching Statement

I began my career as an assistant professor during the 2006 Fall Semester at the University of Arkansas. I transferred to the University of Texas during the 2012 Fall Semester. Thus, in total, I currently have eight full years of academic teaching experience. As only a fellow teacher can understand, I have spent much of these eight years feeling like a student! This feeling has never been more intense than during the past year, when I accepted the challenge of teaching two new courses I had never taught before (one at the undergraduate level and one at the graduate level). These were humbling experiences, as I spent many late nights and early mornings trying to: (a) review and prepare course material, and (b) figure out how to effectively communicate it to my students. Through challenging experiences, I have learned that students are not inferior to teachers; they are simply inexperienced in a certain area. The privilege of a teacher is to help students gain experience and simultaneously facilitate a pattern of learning that the students can carry with them throughout their lives. In this context, we, as academicians, should strive to be both students and teachers throughout our careers.

My Teaching Philosophies and the "Big Picture"

Early in my undergraduate civil engineering education, I learned the term "plug and chug". It referred to the process of plugging numbers (i.e., the given portion of a homework problem) blindly into various equations until you came up with an answer that matched the correct one in the back of the text book. Sadly, the only thing that "plug and chug" students learned was how to use a calculator. It was my observation that students only resorted to this method when they could not see the "big picture".

One of my teaching aspirations is to help students see the big picture. To me, this means helping the student fully understand the problem before trying to explain the solution. As a graduate and undergraduate student, I often found myself taking notes on the derivation of a complicated formula while simultaneously wondering what the formula was used to solve or why we would want to solve it. Problem solving and true learning require the ability to think critically. It is impossible to think critically if one does not have in mind the desired end result. I have learned from these experiences. Thus, as a teacher, I try to make the end visible from the beginning. I want students to understand context before details. I want students to hypothetically scratch their heads and say, "Oh yeah, I can see how that could be a problem… I wonder how we can solve it?" With the seed of curiosity planted, effective teaching becomes much easier; it becomes interactive.

I feel that interactive teaching is also facilitated by balancing theory with an abundance of examples and thought provoking questions. Working through examples and solving real problems opens the learning door. Once this door has been opened, communication can flow much more easily between the teacher and student. The teacher must often initiate this communication through specific, open-ended questions. As a teacher, I do not accept silence as an answer. If the students do not respond, they either do not understand the question, do not understand the material, or they are not paying attention. None of these scenarios are acceptable in an effective classroom. Everyone enjoys learning new things, and if the students are learning they will respond.

I believe that an effective teacher must also be personable and dynamic. For example, as an undergraduate student, one of my professors used a small bag of Fritos from a vending machine to demonstrate the principle of effective stress. He peaked our curiosity and held our attention as we wondered how a bag of chips might be related to soil mechanics. I now use this same demonstration in my classes, only I use a bag of Cheetos, since they are far superior in taste! I get more comments on my instructor evaluations about the bag of Cheetos than almost anything else I do in class. Another way I try to relate to the students is by showing up to class early and letting them play a "song of the day" from YouTube. However, they must explain how their chosen song relates to the course. It's amazing what they come up with. I find this really helps me to build interpersonal rapport with my students and get them excited about the material.

By the Numbers – Continual Progress through Course-Instructor Surveys

As noted above, I have taught at both the University of Arkansas (six years) and the University of Texas (2 years). At the University of Arkansas, I taught four different undergraduate courses and three different graduate courses. During this time, my average instructor rating for undergraduate courses was 4.3/5.0 with an average course GPA of 2.83/4.0, while my average instructor rating for graduate courses was 4.5/5.0 with an average course GPA of 3.22/4.0. (Note that copies of my University of Arkansas course-instructor surveys are included in the Supplemental Materials folder). I have taught two different undergraduate courses and two different graduate courses at the University of Texas. My average instructor rating for these undergraduate courses is 4.5/5.0 with an average course GPA of 2.91/4.0, while my average instructor rating for the graduate courses is 4.3/5.0 with an average course GPA of 3.57/4.0. While these are fairly good ratings, there is room for improvement as I strive to become a better teacher. For example, in one of my first-time courses (CE 311K) taught during the 2014 Spring Semester, I received an instructor rating of 4.7/5.0, with some very positive student comments such as:

> *"Dr. Cox was a very organized and entertaining instructor. His lectures were well planned and full of useful examples. I felt very comfortable asking questions in class and I felt the class was graded fairly."*
>
> *"Your notes on the board and explanations are great! Keep up the enthusiasm and energy; you made a seemingly boring class, very interesting."*
>
> *"Professor Cox is one of the most engaging and fair professors I've ever met. He's always prepared, and his notes are clear and concise. He makes students feel comfortable to ask questions. All in all, Professor Cox is the best professor I've met at UT."*

However, I also noticed a common theme among some of the more critical student comments:

> *"Great class. My only complaint is that your problem/question stating/asking skills could use improvement..."*
>
> *"... Instructions on homework and exams could be more clearly stated."*
>
> *"Though I learned tremendously from this course, I feel as if the requirements were not detailed thoroughly enough... I was left confused as to his explanations in the open-ended problems. I believe this has been a good course, but there is still room for improvement."*

Clearly, some of my students thought I could have communicated requirements on homework assignments and exams more clearly. I was surprised by these comments, but must acknowledge their validity, since multiple students expressed the same concern. This is an area I can focus on improving in my future courses.

I provide these recent student comments as an isolated example of how I believe in utilizing instructor surveys to both validate my teaching efforts and to expose my flaws and encourage improvement. There is nothing better than hearing positive feedback from students who have truly enjoyed your course. However, it can be far more difficult to accept negative student perceptions as reality. During my first year as a faculty member, and in regards to student evaluations, I heard a wise full professor state, "Perceptions are never true, but they are always accurate." That statement has stuck with me over the years, and I always try to acknowledge the hidden truth in critical student comments, then work to improve my teaching style accordingly.

I am also pleased that I have been able to maintain relatively strong instructor ratings in my undergraduate courses while still preserving academic rigor (as evidenced by an average course GPA in the range of 2.8 – 2.9). In the same set of course-instructor surveys mentioned above for CE 311K, a number of students mentioned that they thought the workload was high and that homework assignments and exams were graded a bit harshly. I do not enjoy hearing these comments, but feel it is important to encourage students to do their best work. Undergraduate students are often more critical of complex homework assignments and difficult tests than graduate students, unless they can be inspired to put forth their best efforts and get excited about the material. I will continue to explore ideas on how to do this better in my future courses.

Staying Sharp – Learning from Others and Teaching Myself

Over the past eight years I have attended three week-long summer courses tailored to university professors. These activities have served to not only improve my knowledge in technical areas, but have also provided an opportunity to hone my teaching skills. In particular, the Excellence in Civil Engineering Education (ExCEEd) Teaching Workshop hosted by the American Society of Civil Engineers (ASCE) was especially beneficial. This course is widely recognized as the premier teacher training workshop for professors in civil engineering. One particularly useful concept I learned at ExCEED was the appropriate use of Bloom's Taxonomy in conjunction with course learning objectives. Learning objectives are short statements that help students understand what they should know how to do (action is key) at the end of the semester, or what problems they should know how to solve at the end of a particular topic or lecture. They are like a roadmap that guides a student through key concepts they should learn in the course. In some of my classes, I include the overall course learning objectives in my syllabi. In other classes, I try to communicate learning objectives to the students incrementally throughout the semester. For example, one of the course learning objectives from my CE 357 course is:

> *Predict the vertical stress increase, caused by foundation loads, at various locations in a soil mass using Boussinesq-type stress distribution solutions.*

When a student reads this statement, they know exactly what they will be expected to do after a given lecture (i.e., predict spatially-distributed changes in stress caused by foundation loads). It gives purpose and focus to both the teacher and the student. Furthermore, a well-designed set of

course learning objectives helps to preserve continuity across classes when various instructors are teaching the same course.

Effective course learning objectives should always begin with an action verb (e.g., memorize, solve, calculate, classify, estimate, describe, etc.). Furthermore, a series/set of course learning objectives should guide students through the various levels of Bloom's cognitive domain. From the lowest level to the highest level, Bloom's cognitive taxonomy is: knowledge, comprehension, application, analysis, synthesis, and evaluation. I have learned that a teacher should not instruct at the lower taxonomy levels and then expect students to perform well at the higher levels during examinations (this is bad for the students AND bad for the instructor come evaluation time!). After learning these principles, I now try to lecture, provide homework assignments, and ask examination questions across both the lower and higher levels of Bloom's cognitive domain. A well-crafted set of course learning objectives greatly facilitates this process.

During the 2013-2014 Academic Year, I was asked to teach two new course I had never taught before: CE 397 (Design of Underground Openings; graduate) and CE 311K (Introduction to Computer Methods; undergraduate). During these courses, I was repeatedly reminded of the need to teach myself in order to teach others. The CE 311K course was challenging for me, but I enjoyed it immensely and feel the students really learned a lot (refer to the instructor comments provided above). The CE 397 course was more difficult, because not only had I never taught a course on tunneling/underground construction before, I had never even taken a course on this subject. Nevertheless, my geotechnical group and I felt this was an important subject to include in our graduate curriculum in order to benefit our graduate students and maintain our position as one of the top programs in the country. Even after putting in a lot of effort, I didn't feel great about the final product the students received. However, I'm dedicated to trying it again in the hopes of making improvements with each attempt. I mention this because I want you to know that I am willing to learn new things from others, and work to educate myself in order to provide a better learning experience for our students. I don't want to become stagnant. I don't want to be teaching the exact same material in 10–20 years. As a teacher, I enjoy sharing the experiences I have gained with my students, and as a student I feel I still have much to learn about teaching.

Blending Teaching and Research

I nearly terminated my formal education after my undergraduate degree. My educational perspective changed when a professor invited me to help him work on an undergraduate research project. That undergraduate research experience was the single most important factor that led me to graduate school and my current academic career. It opened my eyes to the challenge of solving real problems that no one else had solved before, and helped me to understand how I needed a truly deep understanding of the principles taught in the classroom in order to solve complex problems. Many faculty members discuss the need to balance teaching and research efforts. I feel that a better target is to effectively blend teaching and research together. I try to do this by bringing research problems into the classroom and by providing research opportunities to undergraduate and graduate students. My ideas and efforts on this front have been validated through reception of the NSF Faculty Early Career Development (CAREER) Award and the Presidential Early Career Award for Scientists and Engineers (PECASE). These awards, and my efforts to blend teaching and research, are discussed in more depth in my research statement.

Teaching Summary Tables

Table 1a. University of Texas Teaching Summary

Metric	Value
Weighted Average UG Course GPA	2.91
Weighted Average Grad Course GPA	3.57
Number of UG Students Taught	114
Number of Grad Students Taught	36
Total Number of Students Taught	150
Average Instructor Evaluation UG	4.5
Average Instructor Evaluation Grad	4.3
Average Course Evaluation UG	3.9
Average Course Evaluation Grad	3.8
Ph.D. Students Completed*	1
M.S. Students Completed*	1
Ph.D. Students in Progress*	4
M.S. Students in Progress*	0

*Count 1 if sole advisor, 0.5 if co-advised

Table 1a. University of Arkansas Teaching Summary

Metric	Value
Weighted Average UG Course GPA	2.83
Weighted Average Grad Course GPA	3.22
Number of UG Students Taught	319
Number of Grad Students Taught	65
Total Number of Students Taught	384
Average Instructor Evaluation UG	4.3
Average Instructor Evaluation Grad	4.5
Average Course Evaluation UG	NA
Average Course Evaluation Grad	NA
Ph.D. Students Completed*	0
M.S. Students Completed*	6
Ph.D. Students in Progress*	NA
M.S. Students in Progress*	NA

*Count 1 if sole advisor, 0.5 if co-advised

Table 2a. University of Texas Course Schedule by Semester; number of students indicated

Course	F 12	S 13	F 13	S 14
CE 357 - Intro to Geotechnical Engineering	43			43
CE387R - Soil and Rock Dynamics		26		
CE 397 - Design of Underground Openings			10	
CE 311K - Intro to Computer Methods				28

Table 2b. University of Arkansas Course Schedule by Semester; number of students indicated

Course	F 06	S 07	F 07	S 08	F 08	S 09	F 09	S 10	F 10	S 11	F 11	S 12
CVEG 5193 - Geotechnical Earthquake Engineering	10		5			11					15	
CVEG 3133 - Soil Mechanics		19	31	15	31			16				
CVEG 563V - Earth Retaining Structures					5				8			
CVEG 4143 - Foundation Engineering						13			37	29	40	18
CVEG 563V - Soil Dynamics							11					
CVEG 4821 - Geotechnical Design Project									27	16	24	

Table 3. Summary of Current Graduate Students Supervised at the University of Texas

Student	Co-Supervisor	Degree	Start Date	Date Reached Candidacy	Date Expected to Reach Candidacy	Expected Graduation Date
Shawn Griffiths	None	Ph.D.	08/2012	05/2013	NA	Summer 2015
Trenton Ellis	None	Ph.D.	08/2012	04/2014	NA	Spring 2016
Andrew Stolte	None	Ph.D.	08/2012	06/2014	NA	Spring 2016
David Teague	None	Ph.D.	06/2014	NA	Spring 2015	Summer 2017

Peer Evaluation of Teaching: **Brady Cox**, PhD

Evaluator: Richard L. Corsi, PhD, P.E. Richard L. Corsi
Budget Council Member, Department of Civil, Architectural and Environmental Engineering
ECH Bantel Professor for Professional Practice

I attended Dr. Brady Cox's lecture in CE311K –Introduction to Computer Methods on February 19th, 2014. This course is required of all undergraduate students in both the Civil and Architectural Engineering degree programs within the department of Civil, Architectural and Environmental Engineering (CAEE). I requested and Dr. Cox granted me permission to speak with this class for approximately 5-7 minutes at the end of lecture and in his absence. As such, I was able to not only observe Dr. Cox's lecture style and interactions with his students, but was also able to speak with his students about his lectures in general and their views of him as a teacher.

Dr. Cox's lecture was on logic structure (FOR and WHILE loops, etc.) associated with MATLAB program development. Much of his lecture involved analyses of code that were projected onto screen. He was quite effective at using this platform, returning to it, prompting students about how to modify the code to accomplish a new task, making changes to the code, and showing how changes affect answers in real-time. In some cases students suggested a change that led to errors in the execution of the code, and Dr. Cox would ask the class to figure out why, a very effective means of conveying information.

Throughout his lecture Dr. Cox worked seamlessly between code projected directly from the computer, hand-written notes projected to screen from a doc.cam, and notes written during lecture on the glass boards in the classroom. The classroom in which Dr. Cox teaches is sub-optimal. It is long, narrow, and has two screens to allow students on either side of the room to see what is projected at any time. Dr. Cox did a very nice job of moving between screens to keep students in each half of the classroom engaged.

Dr. Cox has excellent rapport with his students, often smiling, encouraging them to provide answers to his queries, using terms like "that's cool" to put students at ease, and responding to students by their names. During his lecture he asked over 25 questions and received nearly as many answers from the class. After his lecture I met with his class for about 5 to 7 minutes. I explained the importance of peer evaluations and that CAEE takes the process very seriously. I asked his class to rank the lecture they had just been delivered on a scale of 1 to 10 (5 being an "average" lecture for Dr. Cox, 1 being his worst lecture of the semester, and 10 being his best lecture of the semester). There was almost unanimous agreement that this was a 5 (average for Dr. Cox). I asked whether he had given a bad lecture all semester and they were unanimous in saying "no". In fact, they agreed that every lecture is very good and so the very good lecture that they and I had just heard was effectively the norm. The class had glowing reviews of Dr. Cox as a teacher. They were particularly emphatic that he is always prepared for lecture and that he is fair. It was pointed out that some students in the class have far more computer experience than others, but that Dr. Cox is able to keep everyone engaged and learning.

Dr. Cox has a very good presence in the classroom. He has good voice cadence and hand motions. He projects his voice well. If there was any (very small) blemish in the lecture it was that on two occasions when he turned his back to the students to write on the glass board his voice faded a bit and was difficult for me to hear; I was sitting in the back row and have ears that are 35 years older than most of the students in the class. I would simply suggest that Dr. Cox

remember to project his voice just a bit more when he writes on the board. He actually did this well 80% of the time with his back turned.

Dr. Cox was very effective at relating the material covered in lecture to past lectures and past homework assignments, thus adding continuity to the course. He started his lecture with "When we finished last time …" as a lead-in to the new material. On another occasion he said "For example, this could have been used in our previous problem on …" He also went back to a previous homework assignment and showed how the new material covered in lecture could be used to solve a problem on that assignment more efficiently.

In summary, Dr. Cox is a very good teacher and seems to have the skills to continue to improve as he moves forward in his career. He is very well organized, has an excellent presence in the classroom and rapport with his students. We are fortunate to have him teaching undergraduate students in CAEE.

Dr. Cox and I met to discuss my peer evaluation on February 27th, 2014.

3 December 2012

To: Prof. Sharon L. Wood, Chair
Civil, Architectural, and Environmental Engineering Department

From: James O. Jirsa

Subject: Peer Review of Teaching—Brady R. Cox

On November 14, 2012, I attended Brady's CE 357 Geotechnical Engineering class. The course is required for our undergraduate students. The areas covered are composition and classification of soils, soil properties and measurements, stresses in soils, settlement and consolidation of soils and shear and bearing capacity of soils. Prior to the class, I reviewed the syllabus for the course to better understand the context of the lecture in the overall organization of the course. On November 14th, Dr. Cox discussed the shear strength of soils.

At the start of the lecture he reviewed material covered in previous lectures to set the stage for introducing new material. He reviewed the triaxial test and discussed the purpose, cost, and time to run tests. For most of the class he discussed the shear strength of granular materials and how the strength could be obtained. He discussed the penetration test and the differences between granular and other types of soils. He presented a very practical explanation of shear strength and how it would be used in design. He gave the class a very good explanation of the meaning of "conservative" in a design context. He went through a short example problem to illustrate the key points in the lecture and provided a chart for correlating field data with design parameters.

As the students arrived for class, Brady engaged them in conversation and seemed to have good rapport with the students. During the lecture, he asked questions to address key points—especially on material that had been covered in previous lectures. He made very effective use of the board. His notes on the board were well-organized and could be seen clearly by all students, including those in the far corners of the room.

I did not review any homework or exams. Since this is Brady's first semester at UT, there are no teaching evaluations available. However, it is apparent from the syllabus for the course, that he is extremely well organized, his expectations are clearly stated, and the material to be covered in the laboratory and the lectures is well laid out.

Based on Brady's personality and his teaching style, I expect he will be one of the best teachers in our department. It is impossible to suggest how he could or should improve his teaching based on the observation of one lecture.

Peer Observation of Teaching—Brady Cox F12

Context or Background Information: Describe the setting in which the lesson took place, relevant information about the makeup of the class, and any other descriptive characteristics that would provide appropriate context to the observation.

Description: CE 357 met in ECJ 6.406 with about 30 CE undergraduate students present.

Observation Area 1: Instructor Goals/Intentions for Class Session

Focus your comments on whether the goals were: 1) clearly stated or portrayed in an obvious fashion, 2) appropriate to the focus of the course, 3) explicitly connected to the flow of previous or future classes.

Comments: Dr. Cox reviewed material from previous lectures regarding the strength of soils as determined by laboratory tests and discussed the purpose, time, and cost of various tests. The focus of the lecture was on the shear strength of granular soils—high permeability, no cohesion. He discussed test procedures for such soils and the use of penetration tests in the field. The focus of the lecture was clearly stated and key points were clearly stated.

Observation Area 2: Student engagement with the subject matter

Examine the degree to which student engagement occurred 1) over a substantial portion of the class meeting time, 2) by a broad segment of students attending the class, 3) in appropriate forms such as discussion, listening/processing, performing, reading, reflecting, speaking, or writing.

Comments: Brady asked questions regarding key points in the lecture—especially during the review of previously presented material. He used a "bag of rocks" to demonstrate a key aspect of soil behavior. He drew out the class regarding the meaning of "conservative" in a design sense and explained it very well. A substantial number of students responded to his questions but he did not address questions to a particular student. He concluded the lecture with an example problem covering concepts discussed during the lecture and in previous lectures. He asked for student input as he discussed the example.

Observation Area 3: Examination of student achievement of goals

Focus your comments on how the instructor developed an understanding of student achievement of goals by methods such as 1) questioning students on course material, 2) observing student performance(s), 3) student-student discussion, 4) informal assessment techniques, 5) quizzes, or 6) other methods.

Comments: His questions were used to assess class understanding of important points in the lecture and resulted in him making specific comments to emphasize these points after hearing their answers. I did not attend the laboratory session that accompanies this course nor did I assess student homework or exams.

Peer Observation of Teaching Conversation Synopsis

Summary of conversation: What are the peer observer's specific recommendations and instructor's planned future actions related to setting goals, actively engaging students, and assessing student achievement of goals?

No specific recommendations by peer observer.

Discussed importance of peer reviews vs course/instructor evaluations.

Brady and I discussed course content and interrelationships between Geotech & structures courses. Also how course fits in UG. program

Brady R. Cox _____ 12-5-2012

Instructor Name (Printed) Date

Instructor Signature

James O. Jirsa _____ 12/5/12

Observer Name (Printed) Date

Observer Signature

Engineering
Civil, Architectural and Environmental Engineering

Summary of Recent (All Years In Rank) UT Austin Course-Instructor Survey Resul
Overall Course/Instructor Items

Semester	Course Number	Course Title	Enrollment		Instructor Averages*		College/School Averages**					
			No. of Students Enrolled on 12th Class Day	No. of Surveys Returned at End of Semester	Overall Instructor Rating Avg.	Overall Course Rating Avg.	Overall Instructor Rating Avg.		Overall Course Rating Avg.		No. Classes Surveyed	
Fall 12	C E 357	GEOTECHNICAL ENGINEERING	43	34	4.3	3.5	N/A	***	N/A	***	N/A	
Spring 13	C E 387R	2-SOIL AND ROCK DYNAMICS	26	26	4.4	4.1	N/A	***	N/A	***	N/A	
Fall 13	C E 397	GEOTECHNICAL ENGR SEMINAR	10	9	4.0	3.1	N/A	***	N/A	***	N/A	
Spring 14	C E 357	GEOTECHNICAL ENGINEERING	43	34	4.5	4.0	N/A	***	N/A	***	N/A	
Spring 14	C E 311K	INTRO TO COMPUTER METHODS	28	25	4.7	4.2	N/A	***	N/A	***	N/A	

*For the computation of the averages, points were assigned to student responses as follows:
Excellent = 5, Very Good = 4, Satisfactory = 3, Unsatisfactory = 2, Very Unsatisfactory = 1

**College/school averages are the average of class averages, based on all courses surveyed in the instructor's college or school during the academic year in which the course was taught.

***New CIS forms were implemented in the fall 2000 semester. The average rating on the overall course and instructor questions on the new Basic and Expanded forms have been found to be approximately 0.1 to 0.2 points lower than those ratings on the old Common form.

Prepared by the Measurement and Evaluation Center

UNIVERSITY OF TEXAS AT AUSTIN
Cox, Brady R C E357 15960
B000 Basic
SURVEYED WITH: 15965 15970 15975 15980 15985

COURSE-INSTRUCTOR SURVEY
GEOTECHNICAL ENGINEERING

Spring 2014 DEPARTMENT COPY
Enrollment = 43
Surveys Returned = 34

	NUMBER CHOOSING EACH RESPONSE					NO. REPLIES THIS ITEM	AVG.
	Str Disag	Disagree	Neutral	Agree	Str Agree		
1 COURSE WELL-ORGANIZED	1	0	1	10	22	34	4.5
2 COMMUNICATED INFORMATION EFFECTIVELY	1	0	2	9	22	34	4.5
3 SHOWED INTEREST IN STUDENT PROGRESS	1	1	4	11	17	34	4.2
4 ASSIGNMENTS AND TESTS RETURNED PROMPTLY	1	0	3	10	20	34	4.4
5 STUDENT FREEDOM OF EXPRESSION	1	1	2	7	23	34	4.5
6 COURSE OF VALUE TO DATE	2	1	3	14	14	34	4.1
	Vry Unsat	Unsat	Satisfact	Very Good	Excellent		
7 OVERALL INSTRUCTOR RATING	0	0	4	9	21	34	4.5
8 OVERALL COURSE RATING	0	0	10	14	10	34	4.0
	Excessive	High	Average	Light	Insuffic		
9 STUDENT RATING OF COURSE WORKLOAD	0	12	22	0	0	34	
	Less 2.00	2.00-2.49	2.50-2.99	3.00-3.49	3.50-4.00		
10 OVERALL UT GRADE POINT AVERAGE	0	2	5	14	12	33	
	A	B	C	D	F		
11 PROBABLE COURSE GRADE	12	18	2	0	0	32	

For the computation of averages, values were assigned on a 5-point scale so that the most favorable response was assigned a value of 5 and the least favorable response was assigned a value of 1.

Scanned: 05/27/2014 Printed: 07/14/2014

UNIVERSITY OF TEXAS AT AUSTIN — COURSE-INSTRUCTOR SURVEY — Spring 2014 DEPARTMENT COPY
Cox, Brady R — C 311K — 15730 — INTRO TO COMPUTER METHODS — Enrollment = 27
B000 Basic — Surveys Returned = 25
SURVEYED WITH: 15735

	NUMBER CHOOSING EACH RESPONSE					NO. REPLIES THIS ITEM	AVG.
	Str Disag	Disagree	Neutral	Agree	Str Agree		
1 COURSE WELL-ORGANIZED	0	0	0	8	17	25	4.7
2 COMMUNICATED INFORMATION EFFECTIVELY	0	0	1	4	20	25	4.8
3 SHOWED INTEREST IN STUDENT PROGRESS	0	0	1	7	17	25	4.6
4 ASSIGNMENTS AND TESTS RETURNED PROMPTLY	0	0	0	12	13	25	4.5
5 STUDENT FREEDOM OF EXPRESSION	0	0	0	2	23	25	4.9
6 COURSE OF VALUE TO DATE	0	1	0	9	15	25	4.5
	Vry Unsat	Unsat	Satisfact	Very Good	Excellent		
7 OVERALL INSTRUCTOR RATING	0	0	2	4	19	25	4.7
8 OVERALL COURSE RATING	0	1	2	12	10	25	4.2
	Excessive	High	Average	Light	Insuffic		
9 STUDENT RATING OF COURSE WORKLOAD	0	10	15	0	0	25	
	Less 2.00	2.00-2.49	2.50-2.99	3.00-3.49	3.50-4.00		
10 OVERALL UT GRADE POINT AVERAGE	0	1	3	10	11	25	
	A	B	C	D	F		
11 PROBABLE COURSE GRADE	10	12	3	0	0	25	

For the computation of averages, values were assigned on a 5-point scale so that the most favorable response was assigned a value of 5 and the least favorable response was assigned a value of 1.

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UNIVERSITY OF TEXAS AT AUSTIN — COURSE-INSTRUCTOR SURVEY — Fall 2013 DEPARTMENT COPY
Cox, Brady R — C E397 — 16180 — GEOTECHNICAL ENGR SEMINAR — Enrollment = 10
8000 Basic — Surveys Returned = 9

	NUMBER CHOOSING EACH RESPONSE					NO. REPLIES THIS ITEM	AVG.
	Str Disag	Disagree	Neutral	Agree	Str Agree		
1 COURSE WELL-ORGANIZED	1	2	3	3	0	9	2.9
2 COMMUNICATED INFORMATION EFFECTIVELY	0	0	1	5	3	9	4.2
3 SHOWED INTEREST IN STUDENT PROGRESS	0	0	0	3	6	9	4.7
4 ASSIGNMENTS AND TESTS RETURNED PROMPTLY	0	0	0	4	5	9	4.6
5 STUDENT FREEDOM OF EXPRESSION	0	0	0	1	8	9	4.9
6 COURSE OF VALUE TO DATE	0	0	0	9	0	9	4.0
	Vry Uneat	Uneat	Satisfact	Very Good	Excellent		
7 OVERALL INSTRUCTOR RATING	0	0	2	5	2	9	4.0
8 OVERALL COURSE RATING	0	1	6	2	0	9	3.1
	Excessive	High	Average	Light	Insuffic		
9 STUDENT RATING OF COURSE WORKLOAD	0	0	7	2	0	9	
	Less 2.00	2.00-2.49	2.50-2.99	3.00-3.49	3.50-4.00		
10 OVERALL UT GRADE POINT AVERAGE	0	0	0	3	6	9	
	A	B	C	D	F		
11 PROBABLE COURSE GRADE	8	1	0	0	0	9	

For the computation of averages, values were assigned on a 5-point scale so that the most favorable response was assigned a value of 5 and the least favorable response was assigned a value of 1.

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UNIVERSITY OF TEXAS AT AUSTIN
Cox, Brady R C E387R 15719
8000 Basic

COURSE-INSTRUCTOR SURVEY
2-SOIL AND ROCK DYNAMICS

Spring 2013 DEPARTMENT COPY
Enrollment = 28
Surveys Returned = 28

	NUMBER CHOOSING EACH RESPONSE					NO. REPLIES THIS ITEM	AVG
	Str Disag	Disagree	Neutral	Agree	Str Agree		
1 COURSE WELL-ORGANIZED	0	0	5	17	4	26	4.0
2 COMMUNICATED INFORMATION EFFECTIVELY	0	0	2	9	15	26	4.5
3 SHOWED INTEREST IN STUDENT PROGRESS	0	0	2	8	18	28	4.6
4 ASSIGNMENTS AND TESTS RETURNED PROMPTLY	0	1	0	12	13	26	4.4
5 STUDENT FREEDOM OF EXPRESSION	0	0	0	6	20	26	4.8
6 COURSE OF VALUE TO DATE	0	0	1	10	15	26	4.5
	Vry Unsat	Unsat	Satisfact	Very Good	Excellent		
7 OVERALL INSTRUCTOR RATING	0	0	1	14	11	26	4.4
8 OVERALL COURSE RATING	0	0	6	12	8	26	4.1
	Excessive	High	Average	Light	Insuffic		
9 STUDENT RATING OF COURSE WORKLOAD	0	4	19	2	1	26	
	Less 2.00	2.00-2.49	2.50-2.99	3.00-3.49	3.50-4.00		
10 OVERALL UT GRADE POINT AVERAGE	0	0	1	12	13	26	
	A	B	C	D	F		
11 PROBABLE COURSE GRADE	11	15	0	0	0	26	

For the computation of averages, values were assigned on a 5-point scale so that the most favorable response was assigned a value of 5 and the least favorable response was assigned a value of 1.

Scanned: 06/05/2013

Printed: 08/15/2013

Student comments (if available):

UNIVERSITY OF TEXAS AT AUSTIN — COURSE-INSTRUCTOR SURVEY — Fall 20XX — DEPARTMENT COPY
Cox, Brady R — C E357 — 15710 — GEOTECHNICAL ENGINEERING — Enrollment = 43
8000 Basic — Surveys Returned = 34
SURVEYED WITH: 15715 15720 15725 15730 15735

	NUMBER CHOOSING EACH RESPONSE					NO. REPLIES THIS ITEM	AVG.
	Str Disag	Disagree	Neutral	Agree	Str Agree		
1 COURSE WELL-ORGANIZED	0	0	2	19	13	34	4.3
2 COMMUNICATED INFORMATION EFFECTIVELY	0	1	2	13	18	34	4.4
3 SHOWED INTEREST IN STUDENT PROGRESS	0	0	2	11	21	34	4.6
4 ASSIGNMENTS AND TESTS RETURNED PROMPTLY	0	0	2	9	23	34	4.6
5 STUDENT FREEDOM OF EXPRESSION	0	0	1	14	19	34	4.5
6 COURSE OF VALUE TO DATE	0	3	6	14	11	34	4.0
	Vry Unsat	Unsat	Satisfact	Very Good	Excellent		
7 OVERALL INSTRUCTOR RATING	0	0	6	12	16	34	4.3
8 OVERALL COURSE RATING	1	4	13	9	7	34	3.5
	Excessive	High	Average	Light	Insuffic		
9 STUDENT RATING OF COURSE WORKLOAD	16	13	5	0	0	34	
	Less 2.00	2.00-2.49	2.50-2.99	3.00-3.49	3.50-4.00		
10 OVERALL UT GRADE POINT AVERAGE	0	1	3	17	13	34	
	A	B	C	D	F		
11 PROBABLE COURSE GRADE	13	16	4	0	0	33	

For the computation of averages, values were assigned on a 5-point scale so that the most favorable response was assigned a value of 5 and the least favorable response was assigned a value of 1.

Scanned: 01/10/2013 — Printed: 07/14/2014

NAME	EID	LAST SEM	COMM POSITION	MAST OR DOCT	DEGREE	FIELD	YYS	2ND DEGREE	FIELD	YYS
BURKETT, TERRY BRYCE	tbb535	132	MEMBER	M	M.S.E.	CIVIL ENGINEE	20132			
ELLIS, TRENTON BLAKE	tbe89	149	CHAIR	D						
FAKER, JEREMY STUART	jsf835	142	MEMBER	M	M.S.E.	CIVIL ENGINEE	20142			
GRIFFITHS, SHAWN CURTIS	sg36832	149	CHAIR	D						
HALL, TAYLOR QUINN	tqh79	132	MEMBER	M	M.S.E.	CIVIL ENGINEE	20132			
HWANG, SUNGMOON	sh34963	149	MEMBER	M	M.S.E.	CIVIL ENGINEE	20146			
KWAN, WING SHUN	wk3547	149	MEMBER	D						
LEE, BOHYOUNG	bl2286	149	MEMBER	D						
MARTIN, JONATHAN GRANT	jgm2443	142	MEMBER	M	M.S.E.	CIVIL ENGINEE	20142			
PEHLIVAN, MENZER	mp28239	132	MEMBER	D	PH.D.	CIVIL ENGINEE	20132			
PLAISTED, MICHAEL DAVID	mp25555	149	MEMBER	D						
ROBERTS, JULIA NICOLE	jnr663	149	MEMBER	M	M.S.E.	CIVIL ENGINEE	20142			
STOLTE, ANDREW C.	acs3665	149	CHAIR	D						
SUNCAR, OSCAR ERNESTO	oes96	142	MEMBER	D						
WANG, XIAOYUE	xw2999	149	MEMBER	D						
WANG, YUBING	yw3678	142	MEMBER	D	PH.D.	CIVIL ENGINEE	20142			
WOOD, CLINTON MILLER	cmw2792	136	CHAIR	D	PH.D.	CIVIL ENGINEE	20136			
ZALACHORIS, GEORGIOS	gz793	142	MEMBER	D	PH.D.	CIVIL ENGINEE	20142			

Postdoctoral Fellows Supervised

Postdoctoral Fellow Supervisions:

None

Research, Publications & Other Evidence of Scholarship/Creativity
Budget Council Assessment

Prepared by:

Ellen M. Rathje

This Budget Council Assessment was developed based on the following information: the candidate's statement on research, the candidate's current vitae, annual reports, and selected publications by the candidate. Dr. Cox spent 6 years as an Assistant Professor at the University of Arkansas before joining the faculty at the University of Texas in September 2012. His scholarly record during his time at Arkansas and Texas are evaluated collectively, although his specific accomplishments at the University of Texas over the last two years are highlighted. The standard for this assessment is other Assistant Professors in the Department of Civil, Architectural, and Environmental Engineering at the University of Texas at Austin who have been successfully promoted to Associate Professor over the last 10 years.

Dr. Cox is predominantly a field experimentalist who uses surface wave methods to characterize the shear wave velocity (i.e., shear stiffness) of soil and rock. His research seeks to improve surface wave methods to more accurately measure properties, *as well as their uncertainty and variability*. The quantification of measurement uncertainty is particularly important for surface wave testing because the measurements are used to infer the properties rather than measure them directly. Surface wave methods also can provide a measure of the natural spatial variability in the properties across a site. These issues of uncertainty and variability are important in geotechnical earthquake engineering because seismic hazard assessments attempt to incorporate all sources of variability and uncertainty. Dr. Cox is making advances in these areas through his CAREER/PECASE award from NSF. Although this research is still in its beginning stages (the CAREER award was received in 2011 and the PECASE in 2012), preliminary results are already gaining attention from the geotechnical engineering community. For example, Dr. Cox organized a session at the 2014 ASCE Geo-Congress in which different researchers (including himself) presented their analysis of a common set of surface wave data collected in New Zealand. Given the same data set, it was eye-opening to see the differences in the inferred shear wave velocity profiles from the different researchers (results described in conference paper 33 in CV). In his analysis of the data, Dr. Cox demonstrated the importance of using all available data (e.g., Rayleigh wave, Love wave, horizontal to vertical ratio) to constrain the velocity profile (results described in conference paper 32 in CV). Through this session Dr. Cox demonstrated the measurement uncertainty associated with velocity profiles measured by different researchers, which was a surprise to many in the engineering community. They are now looking to Dr. Cox as the expert to provide guidance on how best to analyze and interpret surface wave data.

Dr. Cox also has distinguished himself within the earthquake reconnaissance community through his research that investigates earthquake damage and relates it to in situ measurements of the soil and rock properties. He has been involved in four significant earthquake reconnaissance efforts, including the 2010 Haiti earthquake, the 2011 Christchurch, New Zealand earthquake, and the 2011 Tohoku, Japan earthquake. These efforts have involved more than simply visiting

sites to identify damage after an earthquake, but rather they have involved significant data collection using surface wave methods and detailed interpretation of the data to understand the relationship with the observed damage.

Dr. Cox is an active researcher who has published 22 peer-reviewed journal papers (with an additional 2 under review) and 33 conference papers over his career. Six of the 22 journal papers have been published since arriving at UT in September 2012. These numbers are larger than typical for a faculty member in CAEE going up for promotion to Associate Professor (median equal to 11 for cases over the past 10 years). The journal papers are being published in the top journals in the field, such as the J. of Geotechnical and Geoenvironmental Engineering (ASCE) and Earthquake Spectra (J. of the Earthquake Engineering Research Institute, EERI). Only three of the journal papers are related to work that he performed during his PhD studies. Therefore, he has developed a publication record that is independent and separate from the work he did as a PhD student. Ten of his 22 journal papers are related to earthquake reconnaissance efforts. At first glance some may discount these papers as less significant or less technical than the others; but these papers include significant data collection, interpretation, and analysis such that they represent research that is as complex as the other research he has performed. In fact, the analyses and interpretations included in many of these reconnaissance papers *could not have been done without the field measurements made by Dr. Cox* during the reconnaissance. An example of the significant integration of data involved in this type of work is his paper "Shear Wave Velocity- and Geology-based Seismic Microzonation of Port-au-Prince, Haiti" (CV journal paper 12). Before this work there had been no information on the shear wave velocity of soils and rocks across Port-au-Prince, and the available geologic map was at a coarse scale. However, it is well known that these factors influence the distribution of earthquake damage. With a limited budget, Dr. Cox lead the effort to collect the required information to develop a high-quality, high-resolution geologic map and integrate it with measurements of shear wave velocity across the city. This was important information, to understand the observed damage patterns in Port-au-Prince from the 2010 earthquake, and it was used to guide re-development efforts. His ability to collect and integrate this type of unique data is one reason that Dr. Cox is in high demand when performing earthquake reconnaissance.

Dr. Cox has been involved in research projects totaling $3.7M with $1.9M under his direct supervision (since arriving at UT in 2012, he has received $619k in research funding, with $408k under his direct supervision). This level of funding for a candidate's share is somewhat larger than typical for promotion to Associate Professor within the CAEE Department (median $1.5 M). Of his 16 funded research projects (3 obtained since arriving at UT), he was sole PI on 5 and the other 11 projects involved 8 different PIs. This distribution indicates a healthy balance of collaborative and independent work, and his collaborative work is taking place with many different colleagues. He has received a significant amount of funding from the National Science Foundation, and has also received funding from the US Department of Homeland Security, US Department of Transportation, Arkansas Highway and Transportation Department, as well as private industry (i.e., Tonkin and Taylor in New Zealand). As noted earlier, three of his grants have been awarded since joining UT in 2012, which indicates that his success in securing funding has continued at UT. A notable grant is the NSF CAREER Award in 2011 and subsequent PECASE Award in 2012. The PECASE Award is given to a subset of CAREER awardees to recognize those early career researchers in science and engineering who show exceptional potential for leadership. It is the highest honor given by the U.S. government to outstanding researchers beginning their careers.

It is clear from his record and his external letters that Dr. Cox has a strong reputation within the geotechnical engineering community. It is noteworthy that one letter writer (Prof. S. Kramer, Univ of Washington) believed that Dr. Cox was already tenured and was being considered for early promotion to Professor. Some other examples of statements from the external letters are given below:

Prof. Jonathan Bray (UC Berkeley) states, "*Brady is already recognized as one of the top researchers in the area of applied geophysical methods, liquefaction effects, and post-event reconnaissance.*"

Prof. Ricardo Dobry (RPI, NAE) says, "*Professor Cox ... has produced brilliant innovations and refinements in these (surface wave) techniques, has tried them all over the world after some of the strongest and most destructive recent earthquakes, and is now in the process of revolutionizing them as part of his 2011 NSF CAREER Award...*"

Dr. Pierre-Yves Bard (University of Grenoble) "*There is no doubt for me that he has a rich scientific and human potential to lead innovative developments in the field of geotechnical engineering in general, and geotechnical earthquake engineering in particular...*"

Finally, Dr. William Marcuson (USACE, NAE) states, "*I believe Brady Cox to be one of the top 2 or 3 academics in Civil Engineering in the USA, given his age and career stage.*"

List of Five Most Significant Works

A listing of my five most significant works while in rank as an assistant professor is provided below. Note that the publication serial numbers match those from my CV and that underlined names indicate either myself or my current and former graduate students. Also, my contribution to each of these publications was **primary** in terms of both intellectual content and production. Additional information may be found in the list of Co-Authored Works (Section 1).

4. Cox, B.R., Stokoe II, K.H., Rathje, E.M. (2009). "An In-Situ Test Method for Evaluating the Coupled Pore Pressure Generation and Nonlinear Shear Modulus Behavior of Liquefiable Soils," *ASTM Geotechnical Testing Journal*, 32(1), pp. 11-21.

7. Cox, B.R., Beekman, A.N. (2011). "Intra-Method Variability in ReMi Dispersion and Vs Estimates at Shallow Bedrock Sites," *Journal of Geotechnical and Geoenvironmental Engineering*, 137(4), pp. 354-362.

12. Cox, B.R., Bachhuber, J., Rathje, E., Wood, C.M., Dulberg, R., Kottke, A., Green, R.A., Olson, S. (2011). "Shear Wave Velocity- and Geology-based Seismic Microzonation of Port-au-Prince, Haiti," *Earthquake Spectra*, 27(S1), S67-S92.

17. Cox, B.R., Wood, C.M., Hazirbaba, K. (2012). "Frozen and Unfrozen Shear Wave Velocity Seismic Site Classification of Fairbanks, Alaska," *Journal of Cold Regions Engineering*, 26(3), 118-145.

19. Cox, B.R., Boulanger, R.W., Tokimatsu, K., Wood, C.M., Abe, A., Ashford, S., Donahue, J., Ishihara, K., Kayen, R., Katsumata, K., Kishida, T., Kokusho, T., Mason, B., Moss, R., Stewart, J., Tohyama, K., Zekkos, D. (2013). "Liquefaction at Strong Motion Stations in the 2011 Great East Japan Earthquake," *Earthquake Spectra*, 29(S1), 55-80.

Research Statement

Deprem means earthquake in Turkish. This was one of the first words I learned while visiting Turkey for my Master's degree research following the 1999 Kocaeli Earthquake. However, I came close to never learning that word, as I nearly terminated my formal education after my undergraduate degree. I did well in school, but I was ready to end the monotony of classroom work and enter the "real" world of engineering practice. My educational perspective changed when a professor invited me to help him work on an undergraduate research project. That undergraduate research experience was the single most important factor that led me to graduate school and my current academic career. It opened my eyes to the challenge of solving problems that no one else had solved before. Research was a world where the answers were not provided in the back of text books; research was about experimenting, and often times about failing before you found success. Fifteen years later, I'm still hooked on earthquake engineering research, only now I am trying to use my own research projects as tools to get undergraduate and graduate students excited about their education. My ideas and efforts on this front have been validated through reception of the U.S. National Science Foundation (NSF) Faculty Early Career Development (CAREER) Award and the Presidential Early Career Award for Scientists and Engineers (PECASE).

The CAREER Award is NSF's "most prestigious award in support of junior faculty who exemplify the role of teacher-scholars through outstanding research, excellent education and the integration of education and research…" NSF selects up to 20 nominees for the PECASE Award "from among the most meritorious recent CAREER awardees." The White House Office of Science and Technology Policy makes the final selection. The PECASE award is the "highest honor bestowed by the U.S. Government on outstanding science and engineering professionals in the early stages of their independent research careers." And, it comes with an invitation to meet the POTUS (President of the United States) in the White House. I am honored to have received these prestigious research awards. Let me tell you about my research journey and future goals.

My Research Foci – Geotechnical Earthquake Engineering and Subsurface Imaging

My undergraduate research involved a non-intrusive method of subsurface imaging called surface wave testing. Essentially, surface wave testing can be used to determine the depth and thickness of various soil layers without the need to drill boreholes. These subsurface layer profiles are then used in earthquake studies as a means to predict such phenomena as soil liquefaction and soft ground amplification of seismic waves. Near the end of my senior year, my professor received a grant to perform surface wave testing at strong motion stations and soil liquefaction sites shaken by the M7.4 1999 Kocaeli, Turkey Earthquake, which had recently killed more than 17,000 people. I was excited to continue my research and to have the opportunity to travel to Turkey, so I decided to commit to a Master's degree. While visiting Turkey, the devastating effects of earthquakes became personal to me and before I even left the country I had made up my mind to pursue a Ph.D., with the ultimate goal of trying to help mitigate damage from future earthquakes.

Since that undergraduate research project nearly 15 years ago, my research foci have been inseparably linked to subsurface imaging and geotechnical earthquake engineering. In these

years, surface wave methods (SWM's) have become fully entrenched as powerful tools in geotechnical site investigations, and their end result - a subsurface profile of small strain shear modulus as a function of depth, typically indicated by a shear wave velocity (Vs) profile - is used as a key input parameter in many forward engineering analyses. The expanding use of these methods is driven by the challenging and economically prudent desire to use surface-type stress waves to "reach" deeper and deeper within the earth and retrieve accurate and meaningful engineering design parameters (layering and modulus) without the need for exploratory borings.

My career path has made one entire revolution in regards to SWM research; for I now regularly take my own students into the field to study the devastating effects of earthquakes using SWM's. In fact, a few years ago, I took my first Ph.D. student with me to Haiti, where we performed surface wave testing in an effort to provide a seismic microzonation for the rebuilding of Port-au-Prince following the devastating M7.0 earthquake that killed approximately 300,000 people in January 2010. While collecting and analyzing data from Haiti, I realized the critical need to address some important issues in surface wave testing that led to the development of my CAREER/PECASE research proposal.

The DIPS Plan – from Deterministic and Incoherent to Probabilistic and Standardized

The main thrust of my CAREER/PECASE proposal, and much of my current research focus, addresses a major impediment regarding future use and accurate development of SWM's for engineering analyses: namely, the quantification of uncertainty and development of standards for these methods. Having been involved with surface wave testing for many years, I realize the future potential of these methods, but also have an appreciation for the uncertainty involved in the process required to evolve field measurements of surface wave dispersion into subsurface profiles of shear stiffness. The current state of practice may well be described as one where no firm standards exist for this type of testing, and where a single, deterministic Vs profile is generally provided as the end result of a highly non-linear, ill-posed, and mix-determined inversion analysis, without quantification of uncertainty in the dispersion measurements or establishment of confidence intervals for either layer thicknesses or velocities.

As our profession moves toward probabilistic design and performance-based engineering, the inability to provide direct, meaningful quantification of uncertainty in Vs profiles obtained from SWM's has been exposed as a major impediment for future progress. For example, without meaningful estimates of epistemic uncertainty and aleatory variability, a Vs profile used for seismic site response is often arbitrarily varied by +/- 20-30% in an attempt to blindly account for these uncertainties. While performed with the goal of being "conservative", this approach may actually be unconservative, as the problem is one of predicting resonances at the site, which may be diluted by such a wide range of input profiles that do not meaningfully represent site conditions. These issues must be addressed to advance our profession, and it is one of the key goals in my future research plans. I have proposed to address this problem by advancing SWM's from deterministic and incoherent to probabilistic and standardized (DIPS). The DIPS plan (aimed at "smoothing-out the dips" in SWM's) involves: (1) quantification of measurement and dispersion uncertainty in SWM's so that Monte Carlo-based inversions can be used to provide a suite of acceptable Vs profiles fit to the experimental data; thus advancing the state of practice from a single deterministic Vs profile to a probabilistic Vs profile with meaningful confidence

intervals on layer thicknesses and velocities, and (2) development of standards for SWM's; thus advancing the state of practice from incoherent to standardized.

Earthquake Recon and International Research – Bringing the Lessons Back Home

Over the past eight years, I have been very active in the NSF-funded Geotechnical Extreme Events Reconnaissance (GEER) Association. Through this organization, I have received invitations to participate in reconnaissance efforts with engineers and earth scientists to immediately document geotechnical aspects of the 2007 Pisco, Peru Earthquake (M = 8.0), the 2008 Iwate-Miyagi, Japan Earthquake (M = 6.9), the 2010 Haiti Earthquake (M = 7.0), and the 2010 Darfield, New Zealand Earthquake (M = 7.1). These reconnaissance missions have given me a unique perspective on the diverse and devastating effects of earthquakes around the globe. During these trips, I have been able to utilize SWM's to collect critical data to aid in interpreting damage patterns from these events. To my knowledge, I was the first person to use light-weight and highly-portable surface wave equipment to collect subsurface profiles on a GEER mission. SWM's have now become a powerful tool used on many recent GEER missions for quickly and non-intrusively profiling the subsurface in an attempt to collect perishable data and piece together complex structural damage patterns.

As mentioned above, I used SWM's to collect subsurface profiles that were extremely valuable in the immediate aftermath of the 2010 Haiti earthquake. These profiles proved to be almost the only source of engineering data on subsurface conditions available for interpretation of unusual structural damage patterns attributed to possible soil layering effects and topographic amplification. These initial efforts on the GEER mission led to subsequent NSF-funded research to perform a rapid seismic microzonation of Port-au-Prince. This seismic microzonation is currently the only source available to aid Haitian engineers in implementing code-based seismic design for reconstruction of hospitals, schools and government facilities. Following this work, my colleagues and I worked with the United Nations to train Haitians on these code-based procedures in order to determine seismic site classifications and design ground motions. The American Museum of Natural History compiled a scientific documentary of our work in Haiti, which was played in the halls of the museum as a tool to educate visitors on the importance of local site effects during earthquakes. Just type "on shaky ground Haiti" into Google or Youtube to find the video link.

Over the past two years, my UT colleagues and I have been heavily involved in earthquake research in New Zealand. In 2010-2011, the city of Christchurch, New Zealand was devastated by a series of powerful earthquakes, which ultimately led to 181 deaths, the abandonment of approximately 7,500 residential properties and closure of the entire central business district while approximately 2,400 of the 3,000 downtown commercial structures were demolished. These were shocking outcomes for a country with high seismic design standards. I received two NSF RAPID Awards (one as PI and one as Co-PI with Professor Kenneth H. Stokoe as PI) to study these earthquake effects, help the people of New Zealand build a more resilient Christchurch, and bring the lessons-learned back to the U.S. for implementation. One project involves collecting and analyzing the most extensive sets of surface wave data ever compiled using ultra-deep, active-source and passive-wavefield surface wave profiling. This project dovetails perfectly with my CAREER/PECASE research and has challenged me to make huge leaps

forward in my abilities to extend surface wave-derived Vs profiles deeper than ever and quantify uncertainty in the results. These research efforts will directly help Christchurch mitigate such extreme losses in future earthquakes. Furthermore, the additional understanding of site response in deep sediments will benefit seismically active areas of the U.S. underlain by deep soil deposits, such as Los Angeles, Seattle and the New Madrid Seismic Zone.

The other NSF RAPID New Zealand research project involves investigating shallow ground improvement techniques for mitigating soil liquefaction damage to residential construction. In this project, a new liquefaction testing method I developed during my Ph.D. research has been relied upon to evaluate the effectiveness of various shallow ground improvement techniques for remediating liquefiable soils beneath homes in Christchurch. My colleagues and I have literally spent months in New Zealand over the past year utilizing this in situ liquefaction test to help determine which ground improvement methods work best at inhibiting soil liquefaction so that they may be sanctioned by the New Zealand Earthquake Commission for use in a $20 billion residential housing rebuild program. This research also has implications for the U.S., as residential properties are currently not subject to liquefaction evaluation and mitigation measures in our seismic design codes.

Sustainable Funding – Past, Present and Future

As an assistant professor, I have been involved in generating over $3.7 million dollars of external research funding, with over $1.9 million dollars directly under my control. Approximately 65% of my funding has come from the National Science Foundation via seven successful proposals. Approximately 25% of my funding has come from state sources, with the remaining 10% coming from a combination of other federal and private company funding. I am pleased with my success thus far in securing funding through NSF and believe I can continue to be very competitive in writing research proposals to them in the future. However, I also understand that I will not be able to sustain my research program exclusively with NSF funding. Thus, I plan to continue to seek funding from other federal and state agencies (e.g., the U.S. Geological Survey, the Department of Energy, the Department of Homeland Security, the Federal Highway Administration, the Texas Department of Transportation, the Arkansas State Highway and Transportation Department, etc.). However, in order to be truly balanced, I believe I must also look for opportunities to increase my funding from the private sector, and plan on investigating industry funding more intensely over the next few years as a means to further develop a sustainable research program.

Collaborative Research

The nature of my experimental field research has led me to interact with engineers and scientists from various universities, companies, countries and disciplines. I enjoy these interactions immensely. I believe that each successful researcher must find their own identity and become recognized as a leading expert in their field. Thus, a certain level of distinction and separation must be maintained in collaborative research. However, I also believe that significant advancements can be made by compiling teams of bright individuals with different perspectives and skills. There is no better place for fostering these collaborative teams than the University of Texas. I look forward to continual research progress with our community in the future.

Research, Publications & Other Scholarship Summary Tables

Table 1. Research Summary

Metric	Value
Peer-Reviewed Journal Publications in Rank	22
Peer Reviewed Conference Proceedings Publications in Rank	33
Total Citations of all Publications (career)*	234
h-index (career)*	9
Google Scholar Total Citations of all Publications (career)	274
Google Scholar h-index (career)	9
Research Funding Raised (total share)	$3,757,677
Research Funding Raised (candidate share)	$1,919,183
Total Grants/Contracts Received	16
PI on Grants/Contracts Received	8

* Source: Publish or Perish Software on May 29, 2014

Table 2. Grants and Contracts Awarded While in Rank

Co-Investigators	Title	Agency	Grant Total	Candidate Share	Grant Period
None	CAREER/PECASE: Revolutionizing Surface Wave Methods for Engineering Analyses - from Deterministic and Incoherent to Probabilistic and Standardized (DIPS)	The National Science Foundation (NSF)	$421,600	$421,600	July 2011 – June 2016
K. H. Stokoe, (PI)	Field Investigations of Shallow Ground Improvement Methods for Inhibiting Liquefaction Triggering; Christchurch, New Zealand	The National Science Foundation (NSF)	$197,966	$98,983	June 2013 - May 2015
K. H. Stokoe, (PI)	Field Investigations of Shallow Ground Improvement Methods for Inhibiting Liquefaction Triggering; Christchurch, New Zealand	Tonkin and Taylor Ltd.	$223,518	$111,759	June 2013 - May 2015
None	RAPID: Deep Shear Wave Velocity Profiling for Seismic Characterization of Christchurch, NZ - Reliably Merging Large Active-Source and Passive-Wavefield Surface Wave Methods	The National Science Foundation (NSF)	$197,684	$197,684	Dec. 2012 - Nov. 2014

continued below

Co-Investigators	Title	Agency	Grant Total	Candidate Share	Grant Period
A. Rodriguez-Marek (PI), D. Assimaki, M. Pando, W. Silva, J. Wartman	NEES-CR: Topographic Effects in Strong Ground Motion - From Physical and Numerical Modeling to Design	The National Science Foundation (NSF)	$1,144,593	$211,857	Oct. 2009 – Sept. 2013
None	Site-Specific Seismic Ground Motion Analyses for Transportation Infrastructure in the New Madrid Seismic Zone	USDOT Mack-Blackwell Rural Transportation Center (MBTC) and Arkansas State Highway and Transportation Department (AHTD)	$88,592	$88,592	July 2011 – June 2012
None	RAPID: CPT and SASW Testing at Seismograph Stations with Liquefiable Soils Affected by the Tohoku Earthquake, Japan	The National Science Foundation (NSF)	$120,253	$120,253	July 2011 – Dec. 2012
E. Rathje (PI), J. Bachhuber	Development of a Geologic and Geotechnical Database of Port-au-Prince Metropolitan Area for use in Seismic Microzonation Studies	United Nations Development Programme (UNDP)	$50,000	$16,667	Nov. 2010 – June 2011
S. Olson (PI)	RAPID: Geotechnical-Driven Damage Patterns and Liquefaction in the January 2010 Haiti Earthquake	The National Science Foundation (NSF)	$40,000	$20,000	May 2010 – April 2011
J. Cothren, A. Rodriguez-Marek, J. Wartman	Collaborative Research: The M8.0 Pisco Peru Earthquake – A Benchmark Ground Failure Event for Remote Sensing and Data Archiving	The National Science Foundation (NSF)	$325,178	$177,065	Aug. 2009 – Jan. 2011
None	Practical Recommendations for Evaluation and Mitigation of Soil Liquefaction in Arkansas	USDOT Mack-Blackwell Rural Transportation Center (MBTC) and Arkansas State Highway and Transportation Department (AHTD)	$79,524	$79,524	July 2009 – Dec. 2010

continued below

Co-Investigators	Title	Agency	Grant Total	Candidate Share	Grant Period
K. Hazirbaba (PI)	Utilization of Screw Piles in High Seismicity Areas of Cold and Warm Permafrost	Alaska University Transportation Center (AUTC)	$190,424	$33,242	July 2009 – June 2011
K. Grimmelsman (PI), E. Heymsfield	Structural Health Monitoring and Assessment of Critical Intermodal Transportation Infrastructure Elements	U.S. Department of Homeland Security (DHS)	$225,000	$75,000	Jan. 2009 – June 2011
N. Dennis (PI), J. McCartney	Resistance Factors for Pile Foundations	Arkansas State Highway and Transportation Department (AHTD)	$105,817	$35,272	Jan. 2009 – June 2010
J. McCartney	Evaluation of Basal Reinforcement of Flexible Pavements with Geosynthetics	Arkansas State Highway and Transportation Department (AHTD)	$263,459	$175,639	July 2008 – June 2011
J. McCartney	Accelerated Characterization of Full-Scale Reinforced Flexible Pavement Models using a Vibroseis	USDOT Mack-Blackwell Rural Transportation Center (MBTC) and Arkansas State Highway and Transportation Department (AHTD)	$84,069	$56,046	July 2008 – Dec. 2009
		Total	**$3,757,677**	**$1,919,183**	

Relative Division of Labor for Co-PI Research Projects

A listing of all research projects *with co-investigators* is provided below. Note that I was the Principal Investigator (PI) on the project unless otherwise indicated by the letters PI next to a co-investigator's name. For each project, I have indicated the contribution I made to the proposal writing and project execution using a three-level scale: **primary**, **significant** and **supportive**. Additionally, all co-investigators are identified, at the time of the award, as faculty colleagues, consulting engineers, etc.

Co-Investigators	Title	Agency	Grant Total	Candidate Share	Grant Period
K. H. Stokoe, (PI)	Field Investigations of Shallow Ground Improvement Methods for Inhibiting Liquefaction Triggering; Christchurch, New Zealand	The National Science Foundation (NSF)	197,966	98,983	June 2013 - May 2014

Stokoe is a faculty member at the University of Texas and served as PI on the project. Cox is a faculty member at the University of Texas and served as a Co-PI. Stokoe made primary contributions to the proposal writing and project execution. Cox made **significant** contributions to proposal writing and also made **primary** contributions to execution by helping to plan the field work, design sensors, analyze data, etc…

Co-Investigators	Title	Agency	Grant Total	Candidate Share	Grant Period
K. H. Stokoe, (PI)	Field Investigations of Shallow Ground Improvement Methods for Inhibiting Liquefaction Triggering; Christchurch, New Zealand	Tonkin and Taylor Ltd.	223,518	111,759	June 2013 - May 2014

Stokoe is a faculty member at the University of Texas and served as PI on the project. Cox is a faculty member at the University of Texas and served as a Co-PI. Stokoe made primary contributions to the proposal writing and project execution. Cox made **significant** contributions to proposal writing and also made **primary** contributions to execution by helping to plan the field work, design sensors, analyze data, etc…

Co-Investigators	Title	Agency	Grant Total	Candidate Share	Grant Period
E. Rathje (PI), J. Bachhuber	Development of a Geologic and Geotechnical Database of Port-au-Prince Metropolitan Area for use in Seismic Microzonation Studies	United Nations Development Programme (UNDP)	50,000	16,667	Nov. 2010 – June 2011

Rathje is a faculty member at the University of Texas and served as PI on the project. Cox is a faculty member at the University of Arkansas and served as a Co-PI. Bachhuber is a consultant and served as a Co-PI. Rathje made primary contributions to the proposal writing and project execution. Cox and Bachhuber made **supportive** contributions to proposal writing and also made **primary** contributions to execution of the work.

Co-Investigators	Title	Agency	Grant Total	Candidate Share	Grant Period
S. Olson (PI)	RAPID: Geotechnical-Driven Damage Patterns and Liquefaction in the January 2010 Haiti Earthquake	The National Science Foundation (NSF)	40,000	20,000	May 2010 – April 2011

Olson is a faculty member at the University of Illinois and served as PI on the project. Cox is a faculty member at the University of Arkansas and served as a Co-PI. Olson made primary contributions to the proposal writing and project execution. Cox made **significant** contributions to proposal writing and also made **primary** contributions to execution of the work.

Co-Investigators	Title	Agency	Grant Total	Candidate Share	Grant Period
A. Rodriguez-Marek (PI), D. Assimaki, M. Pando, W. Silva, J. Wartman	NEES-CR: Topographic Effects in Strong Ground Motion - From Physical and Numerical Modeling to Design	The National Science Foundation (NSF)	1,144,593	211,857	Oct. 2009 – Sept. 2013

Rodriguez-Marek is a faculty member at Virginia Tech and served as overall project PI. Cox is a faculty member at the University of Arkansas and served as a Co-PI. Assimaki is a faculty member at Georgia Tech and served as senior personnel. Pando is a faculty member at the University of North Carolina and served as a Co-PI. Silva is a consultant and served as senior personnel. Wartman is a faculty member at the University of Washington and served as senior personnel. All team members, with the exception of Silva, made **primary** contributions to the proposal writing. Investigators Rodriguez-Marek, Assimaki, Wartman and Cox also made **primary** contributions to project execution by leading major segments of the work plan. For example, Cox spent four weeks in the field collecting a unique database of mining-induced seismicity for experimental studies of topographic amplification. Cox also graduated a Ph.D. student on this research project.

Co-Investigators	Title	Agency	Grant Total	Candidate Share	Grant Period
J. Cothren, A. Rodriguez-Marek, J. Wartman	Collaborative Research: The M8.0 Pisco Peru Earthquake – A Benchmark Ground Failure Event for Remote Sensing and Data Archiving	The National Science Foundation (NSF)	325,178	177,065	Aug. 2009 – Jan. 2011

Cox is faculty member at the University of Arkansas and served as overall project PI. Cothren is a faculty member at the University of Arkansas and served as a Co-PI. Rodriguez-Marek is a faculty member at Virginia Tech and served as a Co-PI. Wartman is a faculty member at the University of Washington and served as a Co-PI. Cox and Wartman made **primary** contributions to the proposal writing. Cothren and Rodriguez-Marek made significant contributions to proposal writing. Cox, Wartman and Cothren made **primary** contributions to project execution. For example, Cox, Wartman and Rodriguez-Marek spent two weeks Peru collecting data for the project, while Cox, Wartman and Cothren processed and synthesized the data.

Co-Investigators	Title	Agency	Grant Total	Candidate Share	Grant Period
K. Hazirbaba (PI)	Utilization of Screw Piles in High Seismicity Areas of Cold and Warm Permafrost	Alaska University Transportation Center (AUTC)	190,424	33,242	July 2009 – June 2011

Hazirbaba is a faculty member at the University of Alaska, Fairbanks and served as project PI. Cox is faculty member at the University of Arkansas and served as project Co-PI. Hazirbaba made primary contributions to the proposal writing and project execution. Cox made **supportive** contributions to proposal writing and also made **significant** contributions to execution of the project work by spending three weeks in Alaska collecting field data, followed by subsequent data analysis and synthesis.

Co-Investigators	Title	Agency	Grant Total	Candidate Share	Grant Period
K. Grimmelsman (PI), E. Heymsfield	Structural Health Monitoring and Assessment of Critical Intermodal Transportation Infrastructure Elements	U.S. Department of Homeland Security (DHS)	225,000	75,000	Jan. 2009 – June 2011

Grimmelsman is a faculty member at the University of Arkansas and served as project PI. Cox and Heymsfield are faculty members at the University of Arkansas and served as project Co-PI's. Grimmelsman made primary contributions to the proposal writing and project execution. Cox and Heymsfield made **supportive** contributions to proposal writing and also made **supportive** contributions to execution of the work by helping to design and execute field experiments.

Co-Investigators	Title	Agency	Grant Total	Candidate Share	Grant Period
N. Dennis (PI), J. McCartney	Resistance Factors for Pile Foundations	Arkansas State Highway and Transportation Department (AHTD)	105,817	35,272	Jan. 2009 – June 2010

Dennis is a faculty member at the University of Arkansas and served as project PI. Cox and McCartney are faculty members at the University of Arkansas and served as project Co-PI's. Dennis and McCartney made primary contributions to the proposal writing. Dennis made primary contributions to the project execution. Cox made **supportive** contributions to proposal writing and execution of the work.

Co-Investigators	Title	Agency	Grant Total	Candidate Share	Grant Period
J. McCartney	Evaluation of Basal Reinforcement of Flexible Pavements with Geosynthetics	Arkansas State Highway and Transportation Department (AHTD)	263,459	175,639	July 2008 – June 2011

Cox is a faculty member at the University of Arkansas and served as project PI. McCartney is a faculty member at the University of Arkansas and served as project Co-PI. Cox and McCartney made **primary** contributions to the proposal writing and **primary** contributions to the project execution.

Co-Investigators	Title	Agency	Grant Total	Candidate Share	Grant Period
J. McCartney	Accelerated Characterization of Full-Scale Reinforced Flexible Pavement Models using a Vibroseis	USDOT Mack-Blackwell Rural Transportation Center (MBTC) and Arkansas State Highway and Transportation Department (AHTD)	84,069	56,046	July 2008 – Dec. 2009

Cox is a faculty member at the University of Arkansas and served as project PI. McCartney is a faculty member at the University of Arkansas and served as project Co-PI. Cox and McCartney made **primary** contributions to the proposal writing and **primary** contributions to the project execution.

4. ACADEMIC ADVISING, COUNSELING, AND OTHER STUDENT SERVICES

Budget Council Statement

Prepared by Robert B. Gilbert

While in rank as an Assistant Professor, Dr. Cox's record of academic advising compares favorably with others in our department at a comparable stage in their careers.

Dr. Cox has taken an active role in advising and counseling both undergraduate and graduate students. Dr. Cox participates in the undergraduate advising process that provides counseling to both Civil Engineering and Architectural Engineering undergraduate students. This effort occurs twice a year in conjunction with pre-registration of courses. He has also supervised three undergraduate research assistants. At the graduate level, Dr. Cox has supervised one Ph.D. student who graduated and is now an Assistant Professor at the University of Arkansas. He has also graduated one M.S. student from The University of Texas at Austin and six M.S. students in his six years at the University of Arkansas.

In my own observations, Dr. Cox's is a great mentor to his graduate students. He motivates them, is demanding of them, and is patient with them.

Brady Cox

Department of Civil, Architectural
and Environmental Engineering

Academic Advising & Counseling Statement

Interacting with the young people we have the privilege of teaching, advising and counseling is one of the most enjoyable parts of being a faculty member. Looking back over the opportunities I have had to both formally and informally advise and counsel students over the past eight years, a number of memories stand out: providing an opportunity for a new graduate student to fly on an airplane for the first time, celebrating with students I helped to obtain a much-desired internship or fellowship, receiving thank you notes from former students for helping them determine their career path, counseling with students who have been caught copying homework assignments, preparing Ph.D. students for careers in academia, providing a funded research opportunity for undergraduates who could use the experience and the extra cash… the list goes on. Let me elaborate on a few of these as a means to demonstrate my philosophy and commitment to academic advising and counseling.

Near the end of my first year in academia, a senior undergraduate student came to my office expressing interest in going to graduate school. After listening to his strong rural accent and reviewing his resume, I learned he grew up on a farm in a small town, was the valedictorian of his high school, had a near perfect undergraduate GPA, and knew how to weld and drive a backhoe. I agreed to support him for his Master's degree and asked him if he could start immediately after his graduation. That summer, just prior to sending him to the Nevada Test Site for nearly a month to help collect field data, I learned he had never flown on a plane before or lived away from home. Needless to say, he needed some mentoring in the beginning! This same student worked with me for six full years, eventually moving with me to the University of Texas, where he graduated with his Ph.D. During this time, he traveled with me to Haiti, Japan, New Zealand, Alaska, California, South Carolina, and elsewhere. I watched him try Thai and Indian food for the first time, and laughed as his eyes watered (he now orders it extra hot). He was an incredible student, and I thoroughly enjoyed helping him on his journey in life just as much as I enjoyed mentoring him to become a tenure track faculty member. Indeed, he helped me greatly as well, for together we have published nine journal articles and twelve peer-reviewed conference proceedings. I honestly feel I could not have done more to prepare him for a career in academia. My goal is to be able to say the same thing in regards to every one of my Ph.D. students, of which I currently have four. They each have had similar opportunities for travel associated with their research, and I always try to have meaningful mentoring conversations with them during this one-on-one time.

Just within the past eight months, I have had the opportunity to support three UT undergraduate students with funds from the NSF Research Experience for Undergraduates (REU) program. This is a true joy to me. As discussed in my Research Statement, an undergraduate research experience was the single most important factor that led me to graduate school and my current academic career. Therefore, I am committed to providing these experiences to my own students. A couple of weeks ago, I was able to take one of these REU students to Southern California for some field work. Coming from a somewhat humble background, he was excited that he would get $41/day for meal per diem and exclaimed, "We can eat steak for every meal!" He clearly did not understand the expense of traveling to Southern California. During this trip, he had a very unique opportunity to spend several days questioning and interacting with my Ph.D. student and

me. He worked extremely hard and thanked me several times for such a great research experience.

Sometimes mentoring experiences are not so full of joy. However, that does not make them less important in a young person's life. Nearly every semester over the past eight years, I have had the unfortunate opportunity to counsel a few students involved in minor academic integrity infractions (such as copying work from a classmate or a past homework solution). It is tempting to let these minor infractions slide, not wanting to dedicate time to the matter and believing that the student will ultimately suffer the consequences when they are unprepared for an examination. Yet, I have found that these situations provide one of the best opportunities for reinforcing/teaching the importance of professional integrity within our engineering code of ethics. Almost without exception, these students acknowledge their mistakes, often shed a few tears, and commit to not doing this again, no matter what the circumstance. While these one-on-one interactions can be time consuming and uncomfortable, I strongly feel that it is my duty as an academician to reinforce the principles of academic integrity, in the hopes that this counsel will help students throughout their careers.

The great educator Robert H. Shaffer said, "We must view young people not as empty bottles to be filled, but as candles to be lit." I couldn't agree with this statement more, and hope my actions show my commitment to the principle. As faculty, it is our privilege to be surrounded every day by candles we can light through advising and counseling. These young people are the future of our professions and society, and I feel the future will be bright if we all make the effort.

Academic Advising, Counseling and Other Student Services Summary Tables

Table 1. Summary of Academic Advising

Metric	Value
Student Organizations Advised	None
Undergraduates Supervised	3 - NSF REU Students
PhD Students Completed *	1
MS Students Completed*	7
PhD Students in Pipeline (as of 09/2014)*	4
MS Students in Pipeline (as of 09/2014)*	0

* count 1 if sole advisor, 0.5 if co-advised

Table 2. List of Completed Graduate Students Under My Supervision

Student	Co-Supervisor	Degree	Start Date	Dissertation/MS Thesis Date	Placement
Clinton Wood	None	Ph.D.	06/2009	08/2013	University of Arkansas - Tenure Track Assistant Professor
David Teague	None	M.S.	08/2012	05/2014*	UT Ph.D. Student - NSF Graduate Research Fellow
Taylor Goldman	None	M.S.	08/2010	12/2011	Consulting Engineer
Shawn Griffiths	None	M.S.	08/2009	05/2011	UT Ph.D. Student
Christina Trowler	None	M.S.	08/2008	05/2010	Consulting Engineer
Jeremy Brooks	None	M.S.	08/2008	12/2009	Consulting Engineer
Clinton Wood	None	M.S.	05/2007	05/2009	UT Ph.D. Student
Andrew Beekman	None	M.S.	01/2007	08/2008	Consulting Engineer

* no thesis – fully funded, his research resulted in two peer reviewed conference papers

Service to the University and to the Nation, State and Community
Budget Council Assessment

Prepared by:

Ellen M. Rathje

Dr. Cox is active in his service commitments to the profession, the University, and the Public.

Dr. Cox is very active in service to the profession. He currently serves an Associate Editor for the ASCE Journal of Geotechnical and Geoenvironmental Engineering. This is one of the top journals in the field of Geotechnical Engineering. As Associate Editor he must identify and solicit reviewers from the broader community, and review the paper himself. He has dedicated himself to these efforts and is spending a significant amount of time making sure the reviews are done well. Dr. Cox is also active in two technical committees within the ASCE Geo-Institute and has organized several conference sessions through his participation in these committees. Organizing these sessions does not only represent a service to the community, but as noted in the Budget Council Research Assessment it also provides Dr. Cox an opportunity to raise his profile within the profession.

Dr. Cox is adequately engaged in service to the University through his participation in various committees within the Department of Civil, Architectural, and Environmental Engineering. He was similarly engaged at the University of Arkansas. He currently serves on the Curriculum Committee within CAEE, which is an important committee that shapes the curriculum requirements. He also serves on the Distinguished Lecture Committee, which affords him the opportunity to identify leaders in our field to invite as a Distinguished Lecturer.

Dr. Cox is active in service to the general public through his presentations to K-12 students about earthquakes. He has presented to both high school students and elementary students in an effort to get young students interested in STEM fields. It is notable that he is focusing on students at both the elementary and secondary stage of education. Through these efforts he is trying to improve interest in STEM fields and make a difference in the lives of young people.

Service Statement

The national and international academic systems cannot be sustained without faculty service contributions. The success of everything in academia from administration committee work to scholarly peer review hinges on the willingness of faculty members to volunteer quality time and effort. Thus far in my career, my commitment to service has been demonstrated primarily in scholarly peer review, committee work (international, national and university level) and outreach to the local community.

In their *Science* paper "Battling the Paper Glut", Siegel and Baveye (2010, Vol. 329 pg. 1466) question whether or not the current state of scholarly publishing and peer review can be sustained:

> *"The top journals now are flooded with numbers of manuscripts beyond most editors' capacity to handle. Reviewers are solicited to scrutinize not just manuscripts but also research proposals and governmental reports. Yet, peer-reviewing is rarely, if ever, valued by academic institutions as a fruitful way for researchers to spend their time, so finding good reviewers has become more and more difficult... Journals should demand that for every paper submitted, an author provide three reviews of other manuscripts."*

After reading this paper in 2010, my views on the peer review process were forever changed. Since every piece of scholarly work (papers and proposals) must be scrutinized by 2 or 3 other qualified academics, we must, on average, be serving as reviewers for 2-3 times the number of papers and proposals we submit. If we are not doing this, we are contributing to a system that cannot sustain itself.

I have been serving as an associate editor for the American Society of Civil Engineers (ASCE) *Journal of Geotechnical and Geoenvironmental Engineering* (JGGE) since 2012. From this experience, I have learned that the task of securing three reviewers who will provide a quality, timely review for each submitted manuscript is daunting. Indeed, it is absolutely the most challenging and frustrating part of the job. The chief editor for JGGE has now asked that associate editors serve as reviewers for each manuscript assigned to them. A quick check on the JGGE website reveals that I have completed 31 reviews, with one still outstanding because of my current focus on tenure documents! Additionally, I have reviewed numerous manuscripts for these other journals as well: EERI *Earthquake Spectra*, *Soil Dynamics and Earthquake Engineering*, ASTM *Geotechnical Testing Journal*, *Canadian Geotechnical Journal*, *Bulletin of the Seismological Society of America*, *Geophysics Journal International*, and *Soil and Foundations*. I work hard to provide good peer reviews because I believe it is important, and I do it because I know that unless every scholar provides this service our peer review system cannot be sustained. There is nothing more frustrating than inviting an author to review a conference or journal manuscript for a venue they recently submitted to, then hearing back from them that they are too busy to provide a review for another paper.

I am a member of both the ASCE Geo-Institute Earthquake Engineering and Soil Dynamics Committee and the Geophysical Engineering Committee. Through these committees, I have organized two conference sessions and chaired three conference sessions at our annual GeoCongress meetings over the past four years. These activities are enjoyable, but also require

coordinating the peer review of 10-20 papers submitted to each session. Nonetheless, this committee work has allowed me to work closely with a wide range of junior and senior colleagues that I would not have been able to meet otherwise. And, it is nice to see that many of these colleagues are similarly committed to serving our profession.

I have served on various university committees at both my former institution and the University of Texas. At UT, I currently serve on the CAEE Curriculum Committee and the Distinguished Lecture Committee. Serving on the Curriculum Committee has provided me with an opportunity to more rapidly learn a curriculum that is quite different than the one I taught under previously. Serving on the Distinguished Lecture Committee has allowed me to help select and meet influential colleagues who can serve as external reviewers for promotion and tenure. Both of these experiences have been valuable to my career.

Providing professional service to the community has been very fulfilling. While at the University of Arkansas, I served on the Arkansas Governor's Earthquake Advisory Council (AGEAC). This gave me the opportunity to interact with various agencies concerned about emergency response in the event of a large New Madrid Seismic Zone earthquake in the state of Arkansas, and share first-hand knowledge about the chaos following destructive earthquakes around the world. My experiences garnered on earthquake reconnaissance missions have given me a unique perspective to share with those concerned about earthquake preparedness.

My favorite community outreach involves serving as a guest lecturer on earthquake effects for K-12 students. My resume includes a fairly long list of these oral presentations. For example, during the 2013 Spring Semester I spoke to high school students at St. Stephen's Episcopal School and 3rd grade students at Elsa England Elementary. Apparently, my talk at St. Stephen's may have helped UT secure as least one prospective student:

> *Hi Brady,*
>
> *Thank you so much for speaking to my class last Thursday! The students really enjoyed your talk and had some great things to say about you. One student says she is trying to decide between UT and Boston College and you influenced her decision in favor of UT. She said that she thought you were dynamic and engaging and she looks forward to taking classes from you.*
>
> *Thank you again for taking the time to visit us!*
> *Danielle*
>
> ---
> *Danielle Horton*
> *Physics and Engineering Instructor*
> *St. Stephen's Episcopal School*

However, my absolute favorite feedback comes from elementary school kids. They often write me the greatest letters. I still have 20-30 of them sitting on my desk in response to my lecture at Elsa England. They remind me of how "cool" we (UT faculty members) look to these young minds, and how important it is for us to use that influence to bring about positive change. One of my favorite letters reads (in all its 3rd grade spelling glory):

Dear Mr. Cox,

Thank you for your time, we were actuley learning about earthquakes. The presentation was really good! You are realley lucky you got to meet the presedent. Was it true or not? What are the things that can detect vibration called again? My third option of job is a earth quake engineare it is a realley cool job traveling around the world must be fun.

Sincerely,
Sid

I am so touched… who would have thought that my talk would have inspired this young man to move earthquake engineer into third place on his list of job options! Seriously, these notes are the best. What great feedback. I am happy to be able to serve in the capacity of helping young people become excited about the science, technology, engineering and math (STEM) fields.

In summary, I believe service to the community, university, state and nation is a critically important part of scholarly work. Not only is it requisite for us to maintain our academic system, it is paramount to influencing the career paths of the next generation of scientists and engineers who will advance our society. I am happy to play a small role in this grand effort.

Honors and other Evidence of Merit or Recognition
Budget Council Assessment

Prepared by:

Ellen M. Rathje

Dr. Cox has been successful in obtaining research funding from a wide range of sources. He has received several competitive grants from the National Science Foundation, including the CAREER Award and PECASE (Presidential Early Career Award for Scientists and Engineers) Award. In particular, the PECASE Award is very competitive because recipients are selected from the CAREER Award winners across all the NSF and represent only a small percentage of the total CAREER Award winners. Since arriving at UT, he has also been able to leverage some of the NSF grants to obtain funding from industry, such as the grant in 2013 from Tonkin and Taylor in New Zealand to support the research being performed after the Christchurch, New Zealand after the earthquakes there. While at Arkansas, Dr. Cox was also able to obtain competitive research funding from the Arkansas Highway and Transportation Department and Department of Homeland Security.

The most significant award that Dr. Cox has received is the PECASE Award (2012), described above. It is the highest honor given by the U.S. government to outstanding researchers beginning their careers. He has also received the CAREER Award (2011) from NSF and the Hogentogler Award from the ASTM Geotechnical Testing Journal in 2010. This award is given to the best paper published in the ASTM Geotechnical Testing Journal over the previous year. While at the University of Arkansas (UA), Dr. Cox received a research award from the UA Department of Civil Engineering and another research award from the UA College of Engineering. Another indicator of recognition within the community is Dr. Cox's invitation in 2012 to participate in the Inter-Pacific (Inter-comparison of methods for site parameter and velocity profile characterization) benchmarking project in France. He is the sole U.S. representative on the international technical committee of the project, which demonstrates that Dr. Cox is well-known and well-respected in the area of shear wave velocity characterization.

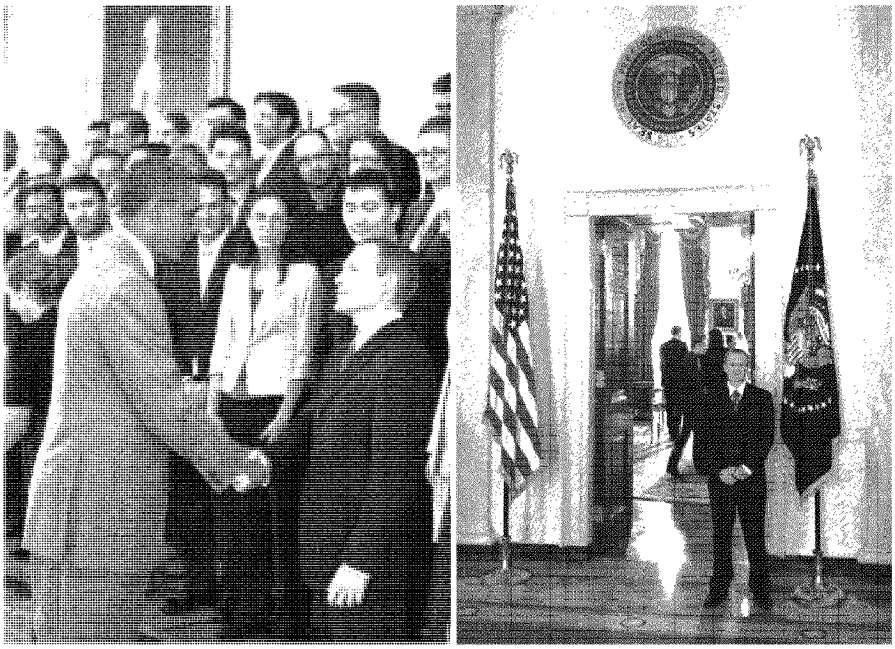
Dr. Cox has been invited to give presentations at various workshops and conferences. Of note are his presentations at a Liquefaction Workshop at the University of California, Berkeley (oral presentation A4 in CV), at the Liquefaction State-of-the-Art Forum organized by the Deep Foundations Institute (oral presentation A6 in CV), at the 2012 Earthquake Engineering Research Institute Annual Meeting (oral presentation A7 in CV), and at the International Conference on Recent Advances in Geotechnical Earthquake Engineering and Soil Dynamics in 2010 (oral presentation A12 in CV). More recently, Dr. Cox was invited to give a plenary presentation along with colleague Dr. Kenneth H. Stokoe II during the Awards Luncheon at the 10th National Conference on Earthquake Engineering. This presentation was focused on the research they are performing in Christchurch, New Zealand that is helping re-build a more resilient Christchurch. Additionally, at the conference Dr. Stokoe and Cox jointly received from the NSF-supported Network for Earthquake Engineering Simulation (NEES) the Outstanding Contributor Award for the Most Influential Geotechnical Research Project.

Honors and Other Recognition Statement

I have been privileged to receive several awards and honors in my time as an assistant professor. A list of some of these honors and awards may be found in my curriculum vitae. Below, I will elaborate on a few of these awards and discuss some additional items not included on my resume.

PECASE Award

My most memorable and special award is the Presidential Early Career Award for Scientists and Engineers (PECASE). Prior to being considered for the PECASE Award, a young National Science Foundation (NSF) investigator must first be selected for the Faculty Early Career Development (CAREER) Award. The CAREER Award is NSF's "most prestigious award in support of junior faculty who exemplify the role of teacher-scholars through outstanding research, excellent education and the integration of education and research." I received the CAREER Award based on my NSF proposal titled "Revolutionizing Surface Wave Methods for Engineering Analyses – from Deterministic and Incoherent to Probabilistic and Standardized (DIPS)." As detailed in my Research Statement, this research topic/project has been a springboard for international collaborations and personal advancement in my field of study. NSF selects up to 20 nominees for the PECASE Award "from among the most meritorious recent CAREER awardees." The White House Office of Science and Technology Policy makes the final selection. The PECASE award is the "highest honor bestowed by the U.S. Government on outstanding science and engineering professionals in the early stages of their independent research careers," and it comes with an invitation to meet the POTUS (President of the United States) in the White House. As you will notice in the picture below, President Obama is quite a bit taller than me!



During his speech to us President Obama said, "Discoveries in science and technology not only strengthen our economy, they inspire us as a people. The impressive accomplishments of today's awardees so early in their careers promise even greater advances in the years ahead." I certainly feel I have much to contribute in advancing my field of study in the future. I can't think of a better place to collaborate with other great scholars than the University of Texas.

Inter-Pacific Technical Committee

I am the sole U.S. representative invited to participate on the international technical committee of the Inter-Pacific (Intercomparison of methods for site parameter and velocity profile characterization) benchmarking project. The Inter-Pacific project is part of the Sigma (Seismic ground motion assessment) project initiated by the French energy company EDF (Electricite de France). The objective of the Sigma project is to improve knowledge on European (particularly France and Italy) ground motion data and seismic hazard assessments to better quantify uncertainties in design ground motion estimates. The Inter-Pacific project is part of this effort and is aimed at establishing a set of test sites where invasive and noninvasive methods can be benchmarked against one another. The objectives of the Inter-Pacific project perfectly dovetail with the goals of my PECASE research and will enable a truly international impact.

Hogentogler Outstanding ASTM Journal Paper Award

During an earthquake, a phenomenon known as soil liquefaction can cause untold damage to our built environment; literally causing multi-story buildings to tip over, houses to sink into the ground, bridges to collapse due to foundation movements, dams to burst from slope failures, and buried sewer, water and gas lines to rupture. During my Ph.D. research, I developed an entirely new test method, and associated instrumentation, for evaluating the fundamental behavior of liquefiable soils in situ. A journal article I published on this topic, "An In Situ Test Method for Evaluating the Coupled Pore Pressure Generation and Nonlinear Shear Modulus Behavior of Liquefiable Soils", appearing in the January 2009 edition of the ASTM *Geotechnical Testing Journal*, was selected as the recipient of the Hogentogler Award for 2010. The Hogentogler Award is the "most prestigious technical award given by ASTM Committee D18" and is presented to the authors of an ASTM paper of "outstanding merit". My new liquefaction testing method has been further refined and relied upon heavily over the past year to evaluate the effectiveness of shallow ground improvement techniques for remediating liquefiable soils beneath homes in Christchurch, New Zealand (discussed further below).

NEES Outstanding Contributor Award – Most Influential Geotechnical Research Project

Over the past two years, my UT colleagues and I have been heavily involved in earthquake research in New Zealand. In 2010-2011, the city of Christchurch was devastated by a series of powerful earthquakes, which ultimately led to 181 deaths, the abandonment of approximately 7,500 residential properties, and closure of the entire central business district while approximately 2,400 of the 3,000 downtown commercial structures were demolished. These were shocking outcomes for a country with high seismic design standards. I received two NSF RAPID Awards (one as PI and one as Co-PI with Professor Kenneth H. Stokoe as PI) to study

these earthquake effects, help the people of New Zealand build a more resilient Christchurch, and bring the lessons-learned back to the U.S. for implementation.

One of our research projects titled "RAPID: Field Investigations of Shallow Ground Improvement Methods for Inhibiting Liquefaction Triggering; Christchurch, New Zealand" involves investigating shallow ground improvement techniques for mitigating soil liquefaction damage to residential construction. In this project, the new liquefaction testing method I developed during my Ph.D. research (refer to the Hogentogler Award discussed above) has been relied upon to evaluate the effectiveness of various shallow ground improvement techniques for remediating liquefiable soils beneath homes in Christchurch. My colleagues and I have literally spent months in New Zealand over the past year utilizing this in situ liquefaction test to help determine which ground improvement methods work best at inhibiting soil liquefaction so that they may be sanctioned by the New Zealand Earthquake Commission for use in a $20 billion residential housing rebuild program. This research also has implications for the U.S., as residential properties are currently not subject to liquefaction evaluation and mitigation measures in our seismic design codes.

For this work, Professor Stokoe and I were selected for the Outstanding Contributor Award – Most Influential Geotechnical Research Project by the Network for Earthquake Engineering Simulation (NEES). We have also been invited to serve as the lunchtime speakers at the upcoming 10th U.S. National Conference on Earthquake Engineering, where we will present the findings from our research projects in New Zealand.

NSF Awards for My Graduate Students

Two of my graduate students have received prestigious awards/honors from NSF that are worth mentioning here. First, after writing a research proposal, one of my Ph.D. students, Clint Wood, was selected as a recipient of an NSF National Center for Airborne Laser Mapping (NCALM) Seed Grant for his dissertation research on topographic amplification of seismic waves. NCALM only awards 10 of these grants annually to graduate students in the field of geosciences. This grant provided him with a set of LiDAR data of his field site in the mountains of Utah that would have cost about $30k to obtain otherwise. Second, one of my M.S. students, David Teague, was recently selected for the NSF Graduate Research Fellowship Program. I can't tell you how excited we were. He has decided to stay here at UT and work on his Ph.D. under my supervision. Seeing my students receive these highly competitive awards/honors has been extremely rewarding.

Chart of External Reviewers
Brady Cox
Department of Civil, Architectural and Environmental Engineering

Name	Title	Institution	Chosen By Candidate/BC	Date Received	Reason for Declination
RECEIVED					
Bard, Pierre-Yves	Ingénieur Général des Ponts-et-Chaussées	University of Grenoble	Budget Council	8/10/2014	
	Pierre-Yves Bard is a senior research scientist at ISTERRE Grenoble (formerly LGIT, an Earth Science laboratory at Univ. Grenoble) and at IFSTTARR (a civil engineering lab, formerly LCPC). He has a PhD in Geophysics from the Joseph Fourier University in Grenoble. His work has mainly been in engineering seismology, bridging the gap between seismologists and earthquake engineers. He has supervised over 30 PhD students and has co-authored over 100 papers in peer reviewed international journals, 160 Conference Proceedings, and many reports for the engineering community. He was selected as a reviewer because he is a leader in the engineering seismology field and because he lead the SESAME project, a Euopean project dedicated to investigating the use of ambient vibrations for site characterization. This research relates directly to the work of Dr. Cox.				
Bray, Jonathan D.	Professor	University of California, Berkeley	Candidate	6/5/2014	
	Jonathan Bray is the Faculty Chair in Earthquake Engineering Excellence at the University of California, Berkeley. He has authored more than 250 research publications. His expertise includes the seismic performance of earth structures, seismic site response, liquefaction and ground failure and its effects on structures, and post-earthquake reconnaissance. Dr. Bray is a Fellow in ASCE, and he has received several honors, including the ASCE Peck Award, BSSA Joyner Lecture, Prakash Award, ASCE Huber Research Prize, Packard Foundation Fellowship, and NSF Presidential Young Investigator Award. He was selected because he is a leading researcher in geotechnical earthquake engineering and can evaluate the impact of Dr. Cox's work.				
Dobry, Ricardo	Professor-NAE	Rensselaer Polytechnic Institute	Candidate	7/22/2014	
	Ricardo Dobry is a Professor at the Rensselaer Polytechnic Institute. He earned the Sc.D. Civil Engineering from MIT in 1971 and was elected to the NAE in 2004. His research interests include soil dynamics, geotechnical earthquake engineering and geotechnical dynamic centrifuge testing. Dr. Dobry has been an invited state-of-the-art and keynote speaker at international meetings and he earned the J. James Croes Medal of the American Society of Civil Engineers in 1985. He was selected because he is a leading researcher in geotechnical earthquake engineering and can evaluate the impact of Dr. Cox's work.				
Frost, J. David	Professor	Georgia Tech	Budget Council	7/25/2014	
	J. David Frost is Professor of Civil and Environmental Engineering at Georgia Tech, where he has served as Professor, head of the Geosystems Engineering Group and as founding director of the Georgia Tech Regional Engineering Program and the Georgia Tech Savannah campus. A core focus throughout Frost's career has been the study and analysis of natural and man-made disasters. He has served on or led NSF-supported post-disaster study teams following many earthquakes around the world, as well as the World Trade Center complex following the 9/11 attacks and he served as a member of the external review board for the NIST report on the Collapse of the World Trade Center Towers. Dr. Frost has been recognized for his teaching and research, including being a recipient of an NSF National Young Investigator Award, the ASCE Huber Civil Engineering Research Prize and the ASTM International Hogentogler Award. He was selected because of his experience with post-event reconnaissance and can evaluate Dr. Cox's contribution to these activities.				
Hashash, Youssef	Professor	University of illinois at Urbana-Champaign	Candidate	7/17/2014	

Chart of External Reviewers
Brady Cox
Department of Civil, Architectural and Environmental Engineering

	Youssef Hashash is Professor in the Department of Civil and Environmental Engineering at the University of Illinois. Dr. Hashash's research interests include deep excavations, earthquake engineering, numerical modeling, and soil-structure interaction. Dr. Hashash is the recipient of numerous awards including Fellow of the American Society of Civil Engineers. He is active in the Earthquake Engineering Research Institute, the American Underground Association and the International Tunneling Association, and the Geo-Institute of ASCE. He was selected because his area of research involves simulations that make use of the mesaurements made by Dr. Cox.				
Kramer, Steven L.	**Professor**	**University of Washington**	**Candidate**	**7/25/2014**	
	Steve Kramer is Prof. in Civil and Environmental Engineering at the University of Washington. His primary research interests include soil liquefaction, site response analysis, seismic slope stability, and hazard analysis. Dr. Kramer is the author of the book Geotechnical Earthquake Engineering, the most commonly used textbook on the subject, and of numerous technical papers and reports. He has been the recipient of the Presidential Young Investigator Award from NSf, the Arthur Casagrande Professional Development Award from ASCE, a Walter Huber Research Prize from ASCE, and the 2009 Norman Medal from ASCE. He was selected because he is a leader in geotechnical earthquake engineering and can evaluate the impact of Dr. Cox's work.				
Marcuson, William F.	**Dr.**	**NAE**	**Budget Council**	**7/12/2014**	
	Dr. William F. Marcuson, III served as director of the Geotechnical Laboratory of the US Army Corps of Engineers Waterways Experiment Station from 1981 until his retirement in 2000. His research focused on soil behavior related to geotechnical problems, seismic design and analysis of embankment dams and seismically-induced liquefaction of soils. He is a Fellow and Honorary Member of ASCE, he received the ASCE Norman Medal, and was the 1999 Karl Tarzaghi lecturer for ASCE. He was elected to the National Academy of Engineering for research and development of liquefaction, dynamic soil properties, and seismic wave propagation as applied to design analysis of earth and rock fill dams. He was selected because of his vast experience in geotechnical earthquake engineering.				
Pender, Michael	**Professor**	**University of Auckland**	**Candidate**	**7/12/2014**	
	Michael Pender is a Professor of Civil and Env Engineering at the University of Auckland and has served as Head of Department. He received his PhD at the University of Canterbury followed 18 months as a post-doctoral fellow at Cambridge University in England. He also serves as a visiting professor to the European School for Advanced Studies in the Reduction of Seismic Risk (ROSE School) , University of Pavia. He has served as the Australasian Vice President of the International Society for Rock Mechanics and as President of the New Zealand Society for Earthquake Engineering. Prof Pender was selected because of his research in geotechnical earthquake engineering and his ability to provide an international perspective on Dr. Cox's research.				
Woods, Richard D.	**Professor Emeritis-NAE**	**University of Michigan**	**Budget Council**	**7/12/2014**	
	Prof. Richard D. Woods, Professor Emeritus and former Chair of the Department of Civil and Environmental Engineering at the University of Michigan, is a world known expert in the field of foundation dynamics, dynamic soil properties, seismic site characterization, and application of geophysics in geotechnical engineering. He has been Chairman of the ASCE Geotechnical Engineering Division, President of the Environmental Engineering Geophysical Society, and Vice President for North America of the International Society for Soil Mechanics and Geotechnical Engineering. He gave the 1997 ASCE Terzaghi Lecture and was named an Honorary Member of ASCE in 2004. He was elected to the National Academy of Engineers in 2003. He was selected because he is an expert in surface wave testing and can provide a thorough assessment of Dr. Cox's work.				
Youd, T. Leslie	**Professor Emeritis-NAE**	**Brigham Young University**	**Budget Council**	**7/10/2014**	
	T. Leslie Youd is currently a faculty emeritis in the Civil and Environmental Engineering Ira A. Fulton College, Brigham Young University. Youd's research has been primarily concerned with the phenomenon of soil liquefaction, lateral spreading, and the use of field observations of geotechnical damage during earthquakes. Youd was elected to the National Academy of Engineering in 2005 and was made an honorary member of the American Society of Civil Engineers in 2006. He was selected because of his expertise in geotechnical earthquake engineering and he can evaluate the impact of Dr. Cox's work				
DECLINED					
None					
NO RESPONSE					
None					

COCKRELL SCHOOL OF ENGINEERING
THE UNIVERSITY OF TEXAS AT AUSTIN

Department of Civil, Architectural and Environmental Engineering • ECJ 4.200
301 E. Dean Keeton Street, C 1700 • Austin, Texas 78712-2100 • (512) 471-4921

Example of Letter Sent

June 2, 2014

Dr. Jonathan Bray
University of California, Berkeley
Department of Civil and Environmental Engineering
453 Davis Hall
Berkeley, CA 94720-1710

Dear Professor Bray:

The Department of Civil, Architectural and Environmental Engineering is considering Dr. Brady Cox for tenure and advancement in rank to the position of Associate Professor at the University of Texas at Austin. We would appreciate your candid assessment of his scholarly contributions to assist our decision-making process. Excellent teaching is an important criterion for promotion, but our evaluation of teaching is being carried out separately, and we are asking you only for information about his scholarly distinction. Copies of Dr. Cox's curriculum vitae and several recent papers are enclosed for your review.

Tenure-track faculty members in our department are normally considered for promotion to associate professor after a probationary period of five full years in rank as assistant professor. Some faculty members who served on the faculty of other institutions prior to joining the University of Texas are considered for promotion to associate professor in less than five years. This is true of Dr. Cox. As you prepare your review please consider his career accomplishments as well as his continued performance at the University of Texas at Austin.

We would appreciate your opinions regarding Dr. Cox's major engineering and/or scientific contributions. In preparing your assessment, please consider the following questions:

1. Do you know Dr. Cox, and if so, for how long and under what circumstances?
2. What are the original, innovative, and/or important contributions that he has made in his field of research? Have his publications influenced the thinking of, or the methods used by, others in your field?
3. How would you assess Dr. Cox's development compared with others in his cohort at research-intensive universities?
4. What is your perspective on Dr. Cox's promise for further professional growth and leadership?

We would be grateful for any additional comments you might have. The more specific you can be in your comments, the more helpful your evaluation will be.

Under the laws of the State of Texas, Dr. Cox has the right to request to see any materials in his personnel file, including your letter. Members of our faculty and internal review committees who see your letter as part of the promotion process will hold the comments you make in confidence, however.

For your comments to receive full consideration, we will need to receive a signed letter from you no later than July 15, 2014. It is not necessary for you to send us a hard copy of your letter, an electronic or scanned version is sufficient. However, we would appreciate receiving a copy that includes your institutional letterhead.

In addition, please enclose a copy of a short version of your curriculum vitae or résumé (preferably no longer than two pages) or the URL for your website where we may obtain this information. If you have questions, please call me at the number given on the letterhead.

We thank you for your time and assistance with this important matter. We realize that the amount of time required to do a thoughtful review is considerable.

Very truly yours,

Richard L. Corsi, Ph.D., P.E.
Chair and ECH Bantel Professor for Professional Practice
Department of Civil, Architectural and Environmental Engineering

List of Five Most Significant Works Sent to Referees

A listing of my five most significant works while in rank as an assistant professor is provided below. Note that the publication serial numbers match those from my CV and that underlined names indicate either myself or my current and former graduate students. Also, my contribution to each of these publications was **primary** in terms of both intellectual content and production. Additional information may be found in the list of Co-Authored Works (Section 1).

4. Cox, B.R., Stokoe II, K.H., Rathje, E.M. (2009). "An In-Situ Test Method for Evaluating the Coupled Pore Pressure Generation and Nonlinear Shear Modulus Behavior of Liquefiable Soils," *ASTM Geotechnical Testing Journal*, 32(1), pp. 11-21.

7. Cox, B.R., Beekman, A.N. (2011). "Intra-Method Variability in ReMi Dispersion and Vs Estimates at Shallow Bedrock Sites," *Journal of Geotechnical and Geoenvironmental Engineering*, 137(4), pp. 354-362.

12. Cox, B.R., Bachhuber, J., Rathje, E., Wood, C.M., Dulberg, R., Kottke, A., Green, R.A., Olson, S. (2011). "Shear Wave Velocity- and Geology-based Seismic Microzonation of Port-au-Prince, Haiti," *Earthquake Spectra*, 27(S1), S67-S92.

17. Cox, B.R., Wood, C.M., Hazirbaba, K. (2012). "Frozen and Unfrozen Shear Wave Velocity Seismic Site Classification of Fairbanks, Alaska," *Journal of Cold Regions Engineering*, 26(3), 118-145.

19. Cox, B.R., Boulanger, R.W., Tokimatsu, K., Wood, C.M., Abe, A., Ashford, S., Donahue, J., Ishihara, K., Kayen, R., Katsumata, K., Kishida, T., Kokusho, T., Mason, B., Moss, R., Stewart, J., Tohyama, K., Zekkos, D. (2013). "Liquefaction at Strong Motion Stations in the 2011 Great East Japan Earthquake," *Earthquake Spectra*, 29(S1), 55-80.

ISTerre
Institut des Sciences de la Terre

Professor Richard L. Corsi
Chair and ECH Bantel Professor for Professional Practice
Department of Civil, Architectural and Environmental Engineering
The University of Texas at Austin
301 East Dean Keeton – Stop C1700
Austin, TX 78712-1056

Pierre-Yves BARD
Ingénieur Général Ponts, Eaux & Forêts

Téléphone: +33(0) 4 76 63 51 72
Télécopie: +33(0) 4 76 63 52 52
Mel: pierre-yves.bard@ujf-grenoble.fr
Web: isterre.fr

Grenoble, 08/08/2014

Object : Assessment of scholarly contributions of Dr. Brady Cox

I am very pleased and honoured to recommend Dr. B. Cox for promotion on the basis of his significant scholarly contributions.

Unité Mixte de Recherche
UMR 5275
UJF/CNRS/UdS/IRD/IFSTTAR

Grenoble :
Adresse géographique :
1381, rue de la Piscine
38400 Saint-Martin-D'Hères

Adresse postale :
BP 53
38041 Grenoble cedex 9

Chambéry :
Université de Savoie
73376 Le Bourget du Lac cedex

I started to hear (very positively) about him 2 years ago through one young colleague from my laboratory (C. Cornou) who met and exchanged with him on non-invasive shear wave velocity measurements. Such exchanges proved rapidly very fruitful, and it was decided to include Dr B. Cox as one of the core scientists in an international benchmarking project dedicated to the comparative assessment of invasive and non-invasive measurements, launched by the French nuclear industry. The first workshop of this "Interpacific" project took place in Torino (Italy) last May, and that was for me the first opportunity to meet and discuss with him. Thus, until very recently, I did not have the opportunity to work directly with him in the same project. The following comments are therefore mainly based on my thoughts derived from reading (some of) his papers and CV, complemented by my feelings from the few recent exchanges within the framework of the Interpacific project.

He obtained his PhD only 8 years ago, but his academic records are already very significant in terms not only of peer reviewed publications (22 already published), but also of awards, and of invited technical presentations at the national and international levels. I was also impressed by the list of invited technical presentations at the regional / state / local scale, within$^ a broad range of institutions going from elementary schools to universities or high-rank technical committees, together with the number of media articles and interviews: this is a witness of very good communication skills, which is not so usual especially when coupled with a high level of expertise for so young a scientist.

I was also impressed by the number of public-funded research projects he has been involved in either as a PI (8) or Co-PI (7): this witnesses his ability to get funding from various agencies at the local (6), national (8) or international (1) levels. As a PI only, he succeeded in raising over 1.5 M$ public funding over the last 8 years, i.e., since his PhD defense. He is deeply involved in a large number of professional committees and associations, and has carried out several consultancy activities in relation with his expertise in shallow to deep geophysical investigations. He is thus fully integrated in the academic and professional communities at local and national scales, and his international integration is growing as witnessed by his activities in New-Zealand, Japan, Haïti and now Europe.

A striking feature in his activities concerns his in-depth involvement in post-earthquake reconnaissance surveys and investigations: he had already participated, before his PhD defense, in field surveys and measurements following the Kocaeli / Turkey 1999,

Observatoire des Sciences de l'Univers de Grenoble

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Nisqually / Washington 2001, and Hawaii 2006 events; and since his PhD he added four events : Pisco (Peru) 2007, Port-au-Prince (Haïti) 2010, Christchurch (New-Zealand) 2011 and Tohoku (Japan) 2011. This provides an invaluable field experience in the actual effects of earthquake in various soil and development contexts.

His scientific activities deal mainly with geotechnical earthquake engineering, with a focus of near surface investigations in relation to site amplification and liquefaction. I could not find time to read in detail the 22 already published papers he co-authored. The 5-paper selection provided in addition to his CV (corresponding to the papers he is the first author of) is a representative one, with two papers related to liquefaction (out of a total of 10), and three to S-wave velocity measurement with non-invasive, active or passive techniques (out of a total of 8). Rather than commenting each of them, I feel more appropriate to highlight some scientific qualities that appear in these studies.

- As already mentioned, Dr Cox activities are deeply relying on in-situ measurements with a broad range of techniques at a vast diversity of sites: he has accumulated a very rich and invaluable experience, which qualifies him as a fully reliable expert who can emit trustworthy comparative assessments on all kinds of invasive and non-invasive geophysical techniques That was one of the reasons why he was enrolled in the core group for supervising the Interpacific project.
- In particular, he is able to implement expensive techniques requiring heavy logistics (such as in situ testing of liquefiable soil under heavy loading) and "low-cost" techniques as well (MASW, ambient vibrations). His adaptability to a wide range of techniques also stands for the technological level: some are highly innovative (either for technology or for post-processing) , some other are older, but he applies them with the same wisdom, accounting for their advantages and keeping their limitations in mind. This qualifies his expertise for a broad range of applications, from site-specific studies for critical facilities in highly-developed countries, to the mapping of site conditions for microzonation studies in low-income areas (such as the work done in Port-au-Prince, Haïti).
- I particularly appreciate the mixture of open-mindness, sincerity and very solid common sense. He does not hesitate to emit strong criticisms to largely used techniques such as the ReMi one (which in my opinion is much oversold and has a high risk to provide misleading results), or to outline the limitations of the liquefaction studies based on limited information (SPT, V_S), and the need for more refined site characterization including geological / geotechnical information. I could also appreciate these qualities during the Interpacific workshop last May in Torino; Brady Cox is able to listen to various arguments, pros and cons, before formulating convincing summary arguments on the best directions to follow. This open-mindness and capacity to listen is thus associated with an acute spirit of synthesis, which is very precious for team work.
- His capacity to work within groups is witnessed by the number of co-authors in most of his papers (the average is between 6 and 7 for his 23 papers)

My personal feeling is thus that Dr B. Cox has already made significant contributions to geotechnical earthquake engineering either by developing (or contributing to develop) innovative technologies or by mastering enough a wide variety of geophysical tools to put them together in an optimal way for a broad variety of applications, and to issue very welcome warnings on the limitations of some of the presently used tools or engineering practice. Despite his relatively young age (only 8 years after his PhD), he has an impressive experience at the national and international levels. His open-mindness and capacity to consider other techniques has allowed him to build his own, specific, profile, with significant originalities with respect to his initial formation; it is not so common to see a young North-American scientist so open to ideas from outside US, namely Japan, New-Zealand and Europe. There is no doubt for me that he has a rich scientific and human potential to lead innovative developments in the field of geotechnical engineering in general, and geotechnical earthquake engineering in particular, to bring new viewpoints and collaborations to the already well established team in Austin, and to conduct projects useful for the whole society, not only in the US, but also worldwide. Would he apply for a position in my University and lab, I would definitely support it !

I therefore deeply recommend him to your consideration for tenure and advancement to associate-professorship at the Department of Civil, Architectural and Environmental Engineering at the University of Texas at Austin.

Pierre-Yves BARD
Group leader, Risks Team, ISTerre Grenoble

Peoples, Hortensia D

From: bardpi@ujf-grenoble.fr
Sent: Monday, August 11, 2014 3:37 AM
To: Peoples, Hortensia D
Cc: bard@obs.ujf-grenoble.fr
Subject: Re: Reminder - On Behalf of Richard L. Corsi-- Letter of Reference for Dr. Brady Cox
Attachments: reference_b_cox_pyb.pdf; CV_PYB.pdf

Dear Professor Corsi

Here is at last my assessment of Dr Cox contributions (and a short CV).
With my deepest apologies for the delay, and the hope it will help

Best regards
pyb
"Peoples, Hortensia D" <hpeoples@mail.utexas.edu> a écrit :

> Dr. Bard,
>
> The Department of Civil, Architectural and Environmental Engineering
> at the University of Texas at Austin is considering Dr. Brady Cox for
> promotion to Associate Professor. As part of this process, we would
> appreciate if you would provide your candid assessment of his
> scholarly contributions. I have attached electronic copies of our
> formal letter, Dr. Cox's current CV, and five of his papers. If you
> would like to receive any other information, or a hard copy of the
> documents, please let me know.
>
> We would appreciate receiving your letter by July 15, 2014. Thank you
> in advance for your assessment.
>
> Sincerely,
> Richard L. Corsi, Ph.D., P.E.
> Chair and ECH Bantel Professor for Professional Practice Department of
> Civil, Architectural and Environmental Engineering The University of
> Texas at Austin corsi@mail.utexas.edu<mailto:corsi@mail.utexas.edu>
>
>
> Hortensia
> **********
> Hortensia Peoples
> Civil, Architectural and Environmental Engineering Cockrell School of
> Engineering The University of Texas at Austin
> 301 East Dean Keeton - Stop C1700
> Austin, TX 78712-1056
> Phone: (512) 232-1704 or (512) 471-4921 [images]

Pierre-Yves BARD

(60 years - born 11/04/1954 in Valence - 26 - France)

SHORT BIOGRAPHICAL SKETCH

Dr. Pierre-Yves Bard is a senior research scientist at ISTERRE Grenoble (formerly LGIT, an Earth Science laboratory) and at IFSTTAR (a civil engineering laboratory, formerly LCPC). From 2008 to 2013, he also had a part-time activity (20%) at ANR (French National Research Agency) as program manager (Natural Risks, Haiti disaster, Great Tohoku earthquake).

After a basic education in Science at the Polytechnic School in Paris, he received a Civil Engineering diploma from the Bridges and Roads School in Paris, and a PhD in Geophysics at the Joseph Fourier University in Grenoble. Since then, he has been working mainly as a researcher in engineering seismology, trying to bridge the gap between seismologists and earthquake engineers.

His research is related with estimation of strong ground motion, with a special emphasis on any kind of site effects related with near-surface heterogeneities, including those related with soil-structure interaction.

A member of the editorial board of several geotechnical and earthquake engineering journals, he is actively involved in the French Association of Earthquake Engineering, and served as an expert for various projects and review panels. Recent achievements during the last decade were the SESAME and NERIES-JRA4 European projects, dedicated to the use of ambient vibrations for site characterization, and the propositions for a new seismic zonation in France with new spectra.

He has supervised about 35 PhD students, taught in post-graduate courses at several French Universities (Grenoble, Strasbourg, Paris) and international training courses (GFZ Potsdam / UNESCO); coauthored around 100 papers in peer reviewed international journals, twice more in Conference Proceedings, and many grey reports for the engineering community.

PRESENT POSITION

Ingénieur Général des Ponts, Eaux et Forêts, Senior Scientist at IFSTTAR (Institut Français des Sciences et Technologies des Transports, de l'Aménagement et des Réseaux formerly LCPC : Laboratoire Central des Ponts-et-Chaussées)
Affecté à ISTERRE (Institut des Sciences de la Terre, Observatoire de Grenoble)

- *Professional address:* ISTERRE Maison des Géosciences - BP 53 X - F38041 Grenoble Cedex
  Tél: 04 76 63 51 72 *Fax:* 04 76 63 52 52
  Email: pierre-yves.bard@ujf-grenoble.fr *Web page:* www.isterre.fr

EDUCATION / ACADEMIC DEGREES :

- Ecole Polytechnique, Paris 1973 - 1976.
- Civil Engineering (Ecole Nationale des Ponts et Chaussées), Paris 1976 - 1978.
- Doctorat ès Sciences Physiques, University of Grenoble, 1977 - 1983.

PAST POSITIONS :

- 1978-1984: Engineer, Ministry of Equipment, fellowship for doctorate studies, LGIT Grenoble
- 1984 present : Research scientist, LCPC Paris- LGIT Grenoble.
- 1986-1987 : Visiting scientist at "Office of Strong Motion Studies" du "California Division of Mines of Geology", Sacramento (California) (NATO fellowship).
- 2008 2013: In charge of the "Natural Risks", "Haiti2010" and "Tohoku 2011" Research programs at ANR (French National Research Agency, part time 20%)

RESEARCH FIELDS:

- Wave propagation in heterogeneous media.
- Engineering seismology and seismic hazard
- Site effects and seismic microzonation
- Soil-structure interaction
- System identification and vibrations of civil engineering structures

TEACHING AND TRAINING

Teaching

- Post-graduate courses in "Seismic hazard and Risk" within several universities and engineering schools : Ecole Nantionale des Ponts et Chaussées (Paris), Ecole Centrale de Paris, University Louis Pasteur (Strasbourg), University Joseph Fourier, University Marne-la-Vallée, INSA Lyon.
- In charge of the "Engineering seismology" module for the "Erasmus Mundus" European Master in Earthquake Engineering and Engineering seismology (MEEES, see http://www.meees.org)
- Lecturer 1993-2012 for the International Training course on "Seismology and Seismic hazard Assessment" (GeoForschungZentrum Potsdam + UNESCO) - (Potsdam, Roorkee, Managua, Nairobi, Beijing, Concepcion/Antofagasta, Pretoria, Bishkek, Heredia/ San Jose, Izmir, Ifrane).
- Lecturer within several Erasmus "intensive programmes" and summer schools: Thessaloniki 1990, 1991, Udine 1991, Cairo 1994, Thessaloniki 1997, Kefallinia 1999.

Supervising of students :

- PhD thesis : 30 defended, + 5 ongoing. : L. Géli (1983-1985), C. Boutin (1984-1987), J.-C. Gariel (1985-1988), F.J. Chavez-Garcia (1987 - 1991), H. Afra (1988 1991), V. Caillot (1988 - 1992), A.-M. Duval (1991 1994), M. Hammoutène (1988 - 1994), M. Kahan (1993 1996), C. Lachet (1993 - 1996), M. Farsi (1993 - 1996), J. Riepl (1994 1997), M. Zaré (1996 - 1999), P. Guéguen (1997- 2000), P. Lussou (1998-2001), C. Cornou (1998-2002), C. Beauval (2000-2003), M. Kham (2000-2004), O. Sèbe (2000-2004), S. Bonnefoy-Claudet (2001-2004), F. Dunand (2001-2005), E. Haghshenas (2001-2005), H. Cadet (2004-2007), C. Michel (2004-2007), F. Renalier (2006-2010), A. Mikael (2007-2011), M. Hobiger (2007-2011), B. Derras (2007-2011), M. Brax (2008-2013), A. Senouci (2009-2014), A. Sandikkaya (2010-2014), J. Iqbal (2008-present), A. Imtiaz (2011-present), C. Salameh (2013-present), V. Perron (2013-present)
- Master 2/DEA : 15; Engineering diplomas : 9

SCIENTIFIC ANIMATION, VARIOUS RESPONSABILITIES, A FEW REFERENCES

French level

- In charge of the national working group for the new French seismic zonation map (2002-2004)
- Member of the working group for establishing guidelines for a correct accounting of seismic hazard for safe dam and dyke design (2009-2011).
- Scenario studies for the city of Nice (2001-2004)
- Vice-President of AFPS (French Association of Earthquake Engineering) (2004-2006, 2008-2012)
- Chairman of the Scientific and Technical Committee of AFPS (2000-2004)
- Chairman of the Evaluation Committee on Microzonation studies (2007-2012)
- Chairman of the Committee on Natural Risks and Climate Change for Overseas Territories, French Ministry of Research, 2009- 2010
- Member of various evaluation committees on research programmes (INSU/PNRN), working groups (Dams and Earthquakes) and boards (RAP, French Accelerometric network)

International level

- Expert (seismic actions, liquefaction) for the seismic design of the Vasco de Gama bridge, Lisbon (Control side)
- Member of the Evaluation Committee for GNDT (Gruppo Nazionale di Difesa del Terremoti, Italian Civil protection), 2001-2004
- Site effect expert for the PEGASOS projects (probabilistic seismic hazard reevaluation for Swiss nuclear power plants, 2001-2004 and 2008-2011)
- Member of the "Technical Advisory Board" of Turkish projects "Microzonation for Earthquake Risk Mitigation" (2002-2004) and "Compilation of National Strong Ground Motion Database in Accordance with International Standards" (2006-2010)
- Coordinator of the European project "SESAME" (2001-2004, http://SESAME-FP5.obs.ujf-grenoble.fr), NERIES JRA4 (2006-20010), and NERA-JRA1 (2010-2014) research projects.
- Scientific Committee of the "SIGMA" R&D project (EDF-CEA-AREVA-ENEL, 2011-2015)
- Member of the Editorial Board of various Journals: *"Soil Dynamics and Earthquake Engineering", "Journal of Seismology and Earthquake Engineering", "Bulletin of Earthquake Engineering"*

PUBLICATIONS

- International, peer reviewed journals: referenced in ISI WoS: 95; Other : 30 ; Citation index : 2917 - H-index : 31 (Google Scholar: *6820/43)*
- Book chapters : 15
- Proceedings : International Conferences : 137 / National Conferences : 57

AWARDS / INVITED CONFERENCES

- AFPS award 1991 (co-lauréat with A. Pecker).
- Conference Keynote lectures: European Seismological Commission 1998 (Tel Aviv), 2002 (Genoa), 2010 (Montpellier); ESG1998 (Yokohama) and 2011 (Santa Barbara); Italian Association of Earthquake Engineering, 2001 (Potenza-Matera); 250th Anniversary of the Lisbon earthquake (Lisbon, 2005), Portuguese National Geotechnical Conference, 2006 (Lisbon); Spanish Conference on Earthquake Engineering, 2007 (Girona);
- Other invited conferences (international conferences or workshops, state-of-the-art) : 25 (Alger, Ain-Temouchent, Bratislava, Bucarest, Caracas, Cuernavaca, Erice, Istanbul, Hatay, Kyoto, Lisbon, Nice, Oxford, Seeheim, Sapporo, Taipei, Tehran, Tokyo, Trieste, San Francisco, Tunis, Vienna)
- Invited seminars in various institutions: France 10 - Foreign institutions 35

UNIVERSITY OF CALIFORNIA, BERKELEY

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Geotechnical Engineering
Department of Civil and Environmental Engineering
440 Davis Hall
Berkeley, California 94720-1710

Phone: (510) 642-1262
FAX: (510) 642-7476

June 5, 2014

Richard L. Corsi, Ph.D., P.E.
Chair and ECH Bantel Professor for Professional Practice
Department of Civil, Architectural and Environmental Engineering
University of Texas at Austin
301 E. Dean Keeton Street, C 1700
Austin, Texas 78712-2100

Dear Prof. Corsi:

I strongly support the advancement of Dr. Brady Cox to the rank of Associate Professor with tenure at the University of Texas at Austin. I have known of Dr. Cox for over nine years. I am keenly aware of the research he has performed, because it has been so well done and meaningful. I became familiar with his research while Dr. Brady Cox was completing his Ph.D. The results of his Ph.D work were shared through several research reports, and his work was presented at an international conference that I attended. Dr. Cox's Ph.D. work was first-rate and important. I have continued to keep track of Dr. Cox's research as he began at the University of Arkansas, because his research continued to be of high quality and of great importance. Recently, he joined your Department at the University of Texas at Austin. He is a tremendous talent and was a great addition to your already strong program in geotechnical engineering. He is most deserving of this advancement. In fact, Prof. Brady is worthy of an acceleration. He is on par or better than most young full professors in civil engineering.

Professor Cox's intelligence, personality, and drive were apparent at our first meeting. Brady is confident and careful when describing the conduct of his research and what its potential impacts are to the profession. He is confident in that he answers questions with ease on specific details and on the broad implications of the research. He understands the underlying mechanics required in his research. Professor Cox is a conscientious researcher, who takes care in presenting the findings of his research. Brady is an excellent communicator. One cannot help but get excited about his research after listening to him.

It is clear that Professor Cox has a thirst for life-long learning and a commitment to excellence that is second to none. Dr. Cox has already made several significant contributions to the field of earthquake engineering, and he possesses outstanding potential for making future contributions to our profession. Dr. Cox is a gifted researcher. He starts with the sound grasp of the fundamentals in his area of study. He first focuses on understanding and characterizing the governing phenomena and then he looks for ways to apply his deeper understanding to solve problems of importance to the profession.

His Ph.D. research while at the University of Texas at Austin focused on an innovative use of in situ geophysical methods for assessing the liquefaction resistance of soils. Brady developed a new method for dynamically assessing the liquefaction resistance of soils in situ. He employed shear wave measurement techniques to develop some of the best insights from the obtained data that I have found in this important and active area of study. Brady's Ph.D. research required a thorough understanding of soil mechanics, geophysical methods, earthquake engineering, and electrical engineering, among other disciplines. Preparing the fieldwork, installing instruments, conducting the experiments, and then interpreting the measurements are among the most challenging tasks required of a Ph.D. student. The

Ph.D. student needs to know so much and is responsible for so much that one develops a keen understanding of the phenomenon one is modeling.

Through his research in this area, Dr. Cox developed many important insights on this important problem, some of which are described in his excellent paper entitled "An In-Situ Test Method for Evaluating the Coupled Pore Pressure Generation and Nonlinear Shear Modulus Behavior of Liquefiable Soils" (i.e., Cox et al. 2009, which was published in the *ASTM Geotechnical Testing Journal*). This paper earned Professor Cox the Hogentogler Award from the American Society for Testing and Materials as the best paper published that year in this important journal. Brady demonstrated his excellent research skills through this line of research.

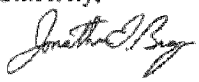
Professor Cox is an active researcher in geotechnical earthquake engineering, and his work is well respected. He has served on several NSF-sponsored Geotechnical Extreme Events Reconnaissance (GEER) post-earthquake reconnaissance teams, and he has made important contributions in this area. Professor Cox has become a leader in post-earthquake reconnaissance, which is a demanding and critical area of research. He has always made timely and important contributions of the GEER reports, such as those on the recent Haiti and New Zealand earthquakes. He is one of two funded Principal Investigators investigating geotechnical aspects of the great Tohoku, Japan M_w9 earthquake. Importantly, he has followed up his reconnaissance activities with long-term NSF-funded research projects, such as his work following the 2007 Pisco, Peru earthquake and its effects on very large liquefaction-induced lateral spreads.

Professor Cox was recently awarded a Presidential Early Career Award for Scientists and Engineers (PECASE) award, which is a prestigious grant awarded to only twenty of our Nation's top young professors. Previously, he had earned a NSF CAREER award. He has clearly earned the respect of his colleagues. In terms of research publications, funding, and honors, Professor Cox has already established himself as one of the top young professors in the field of civil engineering. Professor Cox has risen quickly in stature in our profession, and Brady is already recognized as one of the top researchers in the area of applied geophysical methods, liquefaction effects, and post-event reconnaissance. Within his peer group, Professor Cox is one of the best geotechnical earthquake engineering professors at this time in his career. Professor Cox is definitely worthy of this advancement to Associate Professor with tenure.

In summary, Professor Brady Cox is one of a select group of researchers who are conducting the type of work he is doing and making the impact that he is making. He is by far the youngest of the top people in his innovative area of research, and he has the potential to make lasting significant impacts in many disciplines of engineering. There is no one in his peer group who possesses his combination of intellect, knowledge, and skills in applied engineering geophysics. Brady is already a leader in civil engineering. He is a great ambassador of our profession. He is one of the kindest people whom I have met. He is someone that people want to work with, because he treats all people fairly and gets the most from everyone with his positive attitude.

Thank you.

Sincerely,



Jonathan D. Bray, Ph.D., P.E.
Faculty Chair in Earthquake Engineering Excellence

Peoples, Hortensia D

From: Jonathan Bray <jonbray@berkeley.edu>
Sent: Wednesday, June 04, 2014 3:49 PM
To: Peoples, Hortensia D
Subject: Re: On Behalf of Richard L. Corsi-- Letter of Reference for Dr. Brady Cox
Attachments: Cox-UT-Austin.pdf

Follow Up Flag: Follow up
Flag Status: Flagged

Dear Hortensia,

This is a very easy letter to write. Brady is one of the very best in his peer group. He has earned this promotion plus an acceleration. Thank you.

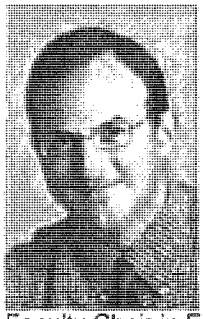
Jonathan

On 05-Jun-14 6:36 AM, Peoples, Hortensia D wrote:

> Dr. Bray,
>
> The Department of Civil, Architectural and Environmental Engineering at the University of Texas at Austin is considering Dr. Brady Cox for promotion to Associate Professor. As part of this process, we would appreciate if you would provide your candid assessment of his scholarly contributions. I have attached electronic copies of our formal letter, Dr. Cox's current CV, and five of his papers. If you would like to receive any other information, or a hard copy of the documents, please let me know.
>
> We would appreciate receiving your letter by July 15, 2014. Thank you in advance for your assessment.
>
> Sincerely,
> Richard L. Corsi, Ph.D., P.E.
> Chair and ECH Bantel Professor for Professional Practice
> Department of Civil, Architectural and Environmental Engineering
> The University of Texas at Austin
> corsi@mail.utexas.edu

Hortensia
****
Hortensia Peoples
Civil, Architectural and Environmental Engineering
Cockrell School of Engineering
The University of Texas at Austin
301 East Dean Keeton - Stop C1700
Austin, TX 78712-1056
Phone: (512) 232-1704 or (512) 471-4921

Jonathan D. Bray, Ph.D., P.E.



Faculty Chair in Earthquake Engineering Excellence
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453 Davis Hall

BIO SUMMARY

Jonathan Bray is the Faculty Chair in Earthquake Engineering Excellence at the University of California, Berkeley. He earned engineering degrees from West Point, Stanford, and Berkeley. Dr. Bray is a registered professional civil engineer and has served as a consultant on several important engineering projects and peer review panels. He has authored more than 250 research publications. His expertise includes the seismic performance of earth structures, seismic site response, liquefaction and ground failure and its effects on structures, earthquake fault rupture propagation, and post-event reconnaissance. Dr. Bray is a Fellow in ASCE, and he has received several honors, including the Peck Award, Joyner Lecture, Prakash Award, Huber Research Prize, Packard Foundation Fellowship, and NSF Presidential Young Investigator Award.

AWARDS

Ralph B. Peck Award, American Society of Civil Engineers, 2013
Fulbright Award, U.S. Fulbright Scholarship to New Zealand, 2013
William B. Joyner Lecture Award, Seismological Society of America & Earthquake Engineering Research Institute, 2012
Thomas A. Middlebrooks Award, American Society of Civil Engineers, 2010
Fellow, American Society of Civil Engineers, 2006
Shamsher Prakash Award for International Contributions to Geotechnical Earthquake Engineering, 1999
Walter L. Huber Civil Engineering Research Prize, American Society of Civil Engineers, 1997
Forensic Engineering Outstanding Paper Award, American Society of Civil Engineers, 1995
David and Lucile Packard Foundation Fellowship for Science and Engineering, 1992
Trent R. Dames and William W. Moore Award, American Society of Civil Engineers, 1992
Presidential Young Investigators Award, National Science Foundation, 1991

RESEARCH

"RAPID: Liquefaction and Its Effects on Buildings and Lifelines in the 2010-2011 Canterbury, New Zealand Earthquake Sequence," National Science Foundation, 1/1/13-12/31/13, $101,916, Co-Principal Investigator.

"Collaborative Research: Geotechnical Extreme Events Reconnaissance (GEER) Association: Turning Disaster into Knowledge," National Science Foundation, 08/13-07/18, $415,733; Principal Investigator.

"Evaluating Fully Nonlinear Effective Stress Site Response Computer Programs using Records from the Canterbury Earthquake Sequence," U.S. Geological Survey, National Earthquake Hazards Reduction Program, 06/01/13-05/31/14, $89,985; Principal Investigator.

"Liquefaction Impact on Critical Infrastructure in Christchurch," U.S. Geological Survey, National Earthquake Hazards Reduction Program, 12/2/11-12/1/12, $85,000; Principal Investigator.

"RAPID: Liquefaction and Its Effects on Buildings and Lifelines in the 22 February 2011 Christchurch, New Zealand Earthquake," National Science Foundation, 7/1/11-6/30/13, $99,554, Principal Investigator.

"Earthquake Surface Fault Rupture Interaction with Building Foundations," National Science Foundation, 08/09-09/13, $297,800; Principal Investigator.

"NEESR-SG: Seismic Performance Assessment in Dense Urban Environments," National Science Foundation, 10/08-3/14, $1,734,665; Principal Investigator.

"Liquefaction-Induced SFSI Damage due to the 2010 Chile Earthquake," Pacific Earthquake Engineering Research Center Project 2422004, 06/11-05/14, $129,979; Principal Investigator.

"Study of Slope Stability in Relation to Roots and Seepage & Levee Failure Forensic Study," The Sacramento Area Flood Control Agency, 10/09-03/13, $614,282, Principal Investigator.

"Improved Description of the Seismic Response of Deep Soft Clay Deposits," National Science Foundation, 09/09-08/13, $277,114; Co-Principal Investigator.

Rensselaer | CIVIL AND ENVIRONMENTAL ENGINEERING

July 21, 2014

Dr. Richard L. Corsi, Chair
Department of Civil, Architectural and Environmental Engineering
ECJ 4.200
301 E. Dean Keeton Street, C 1700
The University of Texas at Austin
Austin, Texas 78712-2100

This is in answer to your letter asking for my assessment of the scholarly distinction and professional accomplishments of Dr. Brady Cox as you consider him for promotion to the rank of Associate Professor with tenure.

I first became aware of Brady's work from his remarkable 2006 PhD thesis where he developed under Prof. Stokoe's direction, a new method for direct measurement of the liquefaction resistance of soils in the field, obtaining excellent results. I made a point at the time to follow his career as I am interested in the related subjects of field geophysical techniques and liquefaction of sands during earthquakes. As a result, I have read a number of his papers over the years, and I have interacted a few times with him on technical subjects, mostly by telephone and e-mail plus a couple of personal encounters.

Based on this plus reviewing of the CV and papers you sent me, let me say that he has fulfilled and exceeded my expectations. The career of Dr. Brady Cox, first as a faculty member at the U. of Arkansas and U. of Texas and in the last two years as a faculty member at UT Austin, has been remarkable by any measure and has placed him at the forefront of earthquake engineering. The impact of his work – especially in the area of noninvasive measurement of relevant ground properties using portable instruments that can be deployed shortly after an earthquake – is really quite incredible considering his youth, and he is poised to make even greater innovative contributions in the near future. In numerical terms, his activity has been quite intense both at the U. of Arkansas and at UT: 22 published refereed journal papers, seven MS and one PhD (with four PhD's in the pipeline), and he has secured (or helped secure) almost $ 3 million dollars in external research support, including several prestigious and very competitive NSF grants.

Rensselaer Polytechnic Institute
110 8th Street | Troy, NY 12180-3590 USA | Jonsson Engineering Center
Phone (518) 276-6360 | Fax (518) 276-4833 | www.ce.rpi.edu

It is important to consider the state-of-the art of the measurement of the shear wave velocity of soil at depth, which is important to quantify the effect of future earthquakes. While we do have reliable techniques to do this, they tend to be invasive (involving drilling in the soil), expensive and time-consuming. This is fine for some projects but is not well suited for many others.
Professor Cox has focused on a family of surface wave technologies that does not require drilling, has produced brilliant innovations and refinements in these techniques, has tried them all over the world after some of the strongest and most destructive recent earthquakes, and is now in the process of revolutionizing them as part of his 2011 NSF CAREER Award and his 2012 Presidential Early Career Award for Scientists and Engineers (PECASE). In addition, he is accelerating the impact of these developments worldwide by personally training personnel in both developed and underdeveloped countries in the use of these technologies, especially through his visits to Haiti, Peru, Japan and New Zealand immediately after strong earthquakes.

Another area where he has done outstanding work is in the development of very innovative field testing techniques and associated equipment to develop liquefaction of saturated sands by vibrations in the field. This is a continuation of his PhD work which also holds a very high promise. Liquefaction is a complex phenomenon still poorly understood, and Brady's new testing techniques offer good hope for better understanding of the physics of liquefaction in the field during strong seismic events. The importance and excellence of one of these new techniques was recognized by the prestigious Hogentogler Award, awarded in 2010 to a paper co-authored by Professor Cox by the American Society for Testing and Materials.

The quality, amount and impact of his research since he started his academic career is outstanding, whether measured by publications in prestigious journals and conference proceedings, a high level of external research support including a number of NSF grants, or prizes such as the Hogentogler, CAREER and PECASE awards.

In summary, Professor Brady Cox is an outstanding young researcher who is at the forefront of his peers and has conducted very innovative and high-impact research, which is starting to revolutionize a very important area of earthquake engineering. Furthermore, he is having an immediate impact in those parts of the world that are in most need of the new technologies through his field research and personnel training after destructive earthquakes. He would have an extremely strong case for promotion and tenure in our Dept. here at RPI.

Based on the considerations above, I strongly support the promotion of Dr. Brady Cox to the rank of Associated Professor with tenure in the Department of Civil, Architectural and Environmental Engineering of the University of Texas at Austin.

Sincerely yours,

Ricardo Dobry
Institute Professor

Peoples, Hortensia D

From: Ricardo Dobry <dobryr@rpi.edu>
Sent: Monday, July 21, 2014 3:24 PM
To: Peoples, Hortensia D
Subject: RE: On Behalf of Richard L. Corsi-- Letter of Reference for Dr. Brady Cox
Attachments: Brady Cox promotion and tenure U. Texas.pdf; Dobry 2-page Bio for recommendation letters (2014).pdf

Dear Ms. Peoples and Dr. Corsi:

As requested, I am enclosing my signed letter of evaluation for the proposed tenure and promotion of Dr. Brady Cox.

I am also enclosing a 2-page CV.

Best regards,

Ricardo Dobry

RICARDO DOBRY

PRESENT POSITION
Institute Professor, Dept. of Civil and Environmental Engineering
Rensselaer Polytechnic Institute
Troy, NY 12180-3590
Phone: 518-276-6934
dobryr@rpi.edu
www.nees.rpi.edu

EDUCATION
Massachusetts Institute of Technology, Sc.D., Civil Engineering, 1971
National University of Mexico, M.S., Soil Mechanics, 1964
University of Chile, Structural Engineer, 1963

ACADEMIC/PROFESSIONAL HISTORY

2007-	Institute Professor, Rensselaer Polytechnic Institute, Troy, NY
1981 -	Professor, Dept. of Civil and Environmental Engrg, Rensselaer Polytechnic Institute, Troy, NY
1988 -	Director, Geotechnical Centrifuge Research Center (since 2005, Center for Engineering Simulation, CEES), Rensselaer Polytechnic Institute, Troy, NY
1984 - 1985	Visiting Professor, Civil Engineering, University of Texas at Austin, Austin, TX
1977 - 1981	Associate Professor, Civil Engineering Department, Rensselaer Polytechnic Institute, Troy, NY
1974 - 1976	Senior Project Engineer, Woodward-Clyde Consultants, San Francisco, CA
1971 - 1973	Professor and Head, Soil Mechanics Group, University of Chile, Santiago, Chile Director, Master's Program in Soil Mechanics (1972-1973)

HONORS
J. James Croes Medal, American Society of Civil Engineers, 1985
Member National Academy of Engineering, 2004
Outstanding Civil Engineering Achievement of ASCE, as part of the team that designed/reviewed foundations of Rion-Antirion Bridge, Greece, 2005
Outstanding Project Award of the Deep Foundations Institute, as part of the team that designed/reviewed foundations of Rion-Antirion Bridge, Greece, 2007
William H. Wiley Distinguished Faculty Award, RPI, 2008
Ishihara Lecturer, 5th Intl Conf. on Earthquake Geotechnical Engineering, Santiago, Chile, 2011
Carrillo Lecturer, National Meeting Mexican Society of Soil Mechanics and Geotechnical Engineering, Cancun, Mexico, 2012

SELECTED GUEST LECTURES

State-of-the-Art report on "Dynamic Response of Soft Clay," International Symposium on Geotechnical Engineering of Soft Soils, Mexico City, 1987.

Guest Lecture on "Soil Properties and Earthquake Response," 10th European Conference on Soil Mechanics and Foundation Engineering, Florence, Italy, 1991.

Guest Lecture on "The Properties of Soils and Their Behavior During Earthquakes," 9th Panamerican Conference on Soil Mechanics and Foundation Engineering, Viña del Mar, Chile, 1991.

Keynote Speaker at International Symposium on Soil Behavior and Ground Damage During Earthquakes, Japanese Society of Soil Mechanics and Foundation Engineering, Tokyo, Japan, November 1995.

State-of-the-Art Speaker on "Soil Dynamics," 11th World Conference on Earthquake Engineering, Acapulco, Mexico, June 1996.

State-of-the-Art Speaker on "Post-Triggering Response of Liquefied Sand in the Free Field and Near Foundation," ASCE Specialty Conference on Geotechnical Earthquake Engineering and Soil Dynamics III, Seattle, Washington, August 1998.

Invited State-of-the-Art Lecturer on "Soil Dynamics and Earthquake Engineering," 11th Panam. Conf. on Soil Mechanics and Geotechnical Engineering, Iguassu Falls, Brazil, August 1999.

Invited Keynote Speaker on "Recent Developments in the Understanding of Earthquake Site Response and Associated Seismic Code Implementation," GeoEng 2000, Intl. Conf. on Geotechnical & Geological Engng., Melbourne, Australia, November 2000.

Invited Keynote Speaker on "Pile Response to Lateral Spreading: Field Observations and Current Research," 4th Intl. Conf. on Earthquake Geotechnical Engineering, Thessaloniki, Greece, June 2007.

15th Buchanan Lecture on "Pile Response to Lateral Spreading: Field Observations and Current Research," Texas A&M U., November 2007.

State-of-the-Art Speaker on "Seismic Response of Deep Foundations Subjected to Liquefaction-Induced Lateral Spreading," 5th Intl. Conf. on Recent Advances on Geotechnical Earthquake Engineering and Soil Dynamics, San Diego, CA, May 2010.

Third Ishihara Lecture on "Investigation into Why Liquefaction Charts Work," 5th Intl Conf. on Earthquake Geotechnical Engineering, Santiago, Chile, January 2011.

XXI Carrillo Lecture on "Simplified Methods in Soil Dynamics," National Meeting Mexican Society of Soil Mechanics and Geotechnical Engineering, Cancun, Mexico, November 2012.

RESEARCH INTERESTS

His main research interests are in the areas of soil dynamics and geotechnical earthquake engineering, and specifically in cyclic soil properties, sand liquefaction, seismic response of embankments, effects of soils on earthquake ground motions, building seismic codes and microzonation, dynamic soil-structure interaction, machine foundations, seismic response of offshore structures, seismic response of bridge foundations, and geotechnical centrifuge testing.

Georgia Institute of Technology

07/28/14

Richard L. Corsi, Ph.D., P.E.
Chair and ECH Bantel Professor for Professional Practice
Department of Civil, Architectural and Environmental Engineering
301 E. Dean Keeton Street, C 1700
University of Texas at Austin
Austin, TX 78712-2100

Re: Evaluation of Scholarly Contributions of Dr. Brady Cox

Dear Professor Corsi,

Further to your letter dated June 2, 2014, I am pleased to provide you with this appraisal of the significance of Dr. Cox's scholarly opus in light of him being considered for promotion to the rank of Associate Professor with tenure. My evaluation is based on information appended to your letter as well as other interactions I have had with him at professional meetings over the past few years. I have not collaborated with him on any research projects however I have had the opportunity to observe him make technical presentations at a number of meetings. In addition, I serve as Co-Chair of GEER and as summarized in his dossier, he has participated in a number of NSF-funded GEER post-earthquake reconnaissance activities thus I have good knowledge of his field research study skills. Comments on his contributions are summarized below.

Research Contributions: In his time as a faculty member at the University of Texas at Austin, Dr. Cox has developed a research program that has involved predominantly PhD graduate students. He has graduated one PhD student and one MS student and he is currently advising four PhD students. This is in contrast to his performance at his previous institution where he predominantly advised and graduated MS students. It appears that the PhD student who he graduated at UTA likely began his studies at the previous institution. It is not clear from his dossier what stage of their studies the current PhD students are although it seems likely that they all began after his arrival at UTA. There is no evidence of BS students participating in research activities. Accordingly, I see elements of his maturing as a researcher associated with his transition from his previous institution to UTA and believe that this may position him better for continued success and contributions as he moves towards the next stage of his academic career. He has been quite successful in securing research funding from both state and federal agencies including a number of prestigious awards from NSF. All these metrics attest to a maturing of his research portfolio as well as the quality of his proposal development and also bodes well for his future as a researcher. His research success is complemented by the fact that he is publishing in both peer-reviewed journals and conference proceedings.

In reviewing the papers appended to his dossier, I would summarize the approach that Dr. Cox takes in his research work and resulting manuscripts as one that seeks to utilize high-quality field measurements and observations together with basic science to understand observed macro-scale phenomena and then

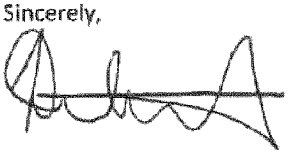
using this understanding to better evaluate field performance of systems. This approach will serve him quite well and will allow him to make useful contributions.

At the same time, I would note that his journal paper publication record is somewhat different than that of many individuals being considered for promotion and tenure. He has authored/co-authored 22 journal publications over an 11 year period dating back to his time as a graduate student. Equally well, 50% of those journal publications were published in one year (2011) and he is averaging 2 journal publications a year since then. Further, 10 of his journal publications involved 1 student (the graduated PhD) and only 1 other student (an MS at his former institution) has published a journal publication with him. While I realize his overall journal publication record may be reasonable, these somewhat variable and different publication metrics are likely at least partially reflective of his change of institution and the fact that his involvement in reconnaissance following the Haiti and New Zealand earthquakes was time critical and consuming. Equally well, I believe it would be good for him to focus on developing a more balanced and broader based research program in terms of students advised (PhD, MS and BS) and publication record (number of journal papers per year and greater student involvement in this activity). Development of a more consistent and stable research portfolio would better underscore his ability to effectively mentor graduate students through all aspects of the research enterprise. In summary, while his productivity in the past four years may be somewhat variable, I believe that overall, his funding record, evolving student advising record and journal publications attest to a trajectory that is positive.

Professional Contributions: As with his research contributions, Dr. Cox has enthusiastically participated in a range of professional activities and my own observations, as well as those of others, are that his contributions are always thoughtful and valuable. Despite the challenges of being a young untenured faculty member developing their own academic dossier and simultaneously expending effort to develop core capabilities for his department, he has clearly worked to develop professional visibility and become engaged in a variety of ways.

Peer Recognition and Overall Assessment: There are many ways to achieve recognition amongst one's peers. I believe that Dr. Cox has worked hard to develop a well rounded academic dossier. He is publishing the results of his research activities in peer reviewed journals and conference proceedings. His research performance provides him with the basis to continue building a solid research program and making solid technical contributions in the future. He has demonstrated the ability to be successful in securing research funds from various agencies and this will allow him to continue making contributions. Accordingly, based on his performance to date and equally importantly, his current trajectory, I believe that Dr. Cox has developed the necessary dossier to deserve promotion to the rank of Associate Professor with tenure.

Sincerely,



J. David Frost, Ph.D., P.E., P.Eng., F.ASCE
Professor of Civil & Environmental Engineering

790 Atlantic Drive
Atlanta, GA 30332, USA
Phone: 404-894-2280; Fax: 404-894-2281

Peoples, Hortensia D

From: Frost, James D <david.frost@ce.gatech.edu>
Sent: Monday, July 28, 2014 1:12 PM
To: Peoples, Hortensia D
Cc: david.frost@ce.gatech.edu
Subject: RE: Reminder - On Behalf of Richard L. Corsi-- Letter of Reference for Dr. Brady Cox
Attachments: CoxPromoAssocDF.pdf

Dear Dr. Corsi,

I apologize for being late in submitting this letter however my daughter was in hospital ICU all last week and now that she is back home, I am able to catch up on overdue correspondence. I hope the attached letter is still of value to you.

Sincerely,

David

J. David Frost, Ph.D., P.E., P.Eng., F.ASCE
School of Civil & Environmental Engineering
Georgia Institute of Technology
Phone: 404-894-2280; Fax: 404-894-2281
Email: david.frost@ce.gatech.edu

From: Peoples, Hortensia D [mailto:hpeoples@mail.utexas.edu]
Sent: Thursday, July 17, 2014 10:29 PM
To: david.frost@ce.gatech.edu
Subject: Reminder - On Behalf of Richard L. Corsi-- Letter of Reference for Dr. Brady Cox
Importance: High

Dr. Frost,

The Department of Civil, Architectural and Environmental Engineering at the University of Texas at Austin is considering Dr. Brady Cox for promotion to Associate Professor. As part of this process, we would appreciate if you would provide your candid assessment of his scholarly contributions. I have attached electronic copies of our formal letter, Dr. Cox's current CV, and five of his papers. If you would like to receive any other information, or a hard copy of the documents, please let me know.

We would appreciate receiving your letter by July 15, 2014. Thank you in advance for your assessment.

Sincerely,
Richard L. Corsi, Ph.D., P.E.
Chair and ECH Bantel Professor for Professional Practice
Department of Civil, Architectural and Environmental Engineering
The University of Texas at Austin
corsi@mail.utexas.edu

Hortencia

****

Hortensia Peoples

J. David Frost, Ph.D., P.E., P.Eng., F.ASCE

Biography

J. David Frost is a Professor of Civil & Environmental Engineering at the Georgia Institute of Technology. He worked for several years in Canada on a range of natural resource projects before receiving MS (1986) and PhD (1989) degrees in Civil Engineering from Purdue University. He is a Registered Professional Engineer in Canada and US and a Fellow of ASCE. His research focuses on the development and implementation of digital data collection systems for studying subsurface problems related to earthquakes at multiple scales and he has received two US patents for multi-sensor subsurface characterization systems. He has graduated 30 PhD students, 40% of whom have gone on to academic careers themselves. He is currently advising 7 PhD students. He has served on or led NSF supported post-disaster study teams following earthquakes in US, Turkey, India, China, Chile and Japan as well as at the World Trade Center complex following the 9/11 attacks. He has organized numerous workshops and conferences on the applications of spatial analysis tools to study both regional effects and damage patterns from earthquakes and well as the micro-scale response of liquefiable soils under various loading conditions. He has received a number of awards for his research work including an NSF National Young Investigator Award, the ASCE Huber Civil Engineering Research Prize and the ASTM Hogentogler Award. He is an active and engaged member of a number of professional organizations including ASCE, ASTM, CGS, CUREE, EERI, GEER and IGS.

UNIVERSITY OF ILLINOIS
AT URBANA-CHAMPAIGN

Department of Civil & Environmental Engineering
RM 2230C NCEL, MC-250
205 N. Mathews Ave.
Urbana, IL 61801

Wednesday, July 16, 2014

Richard L. Corsi, Ph.D., P.E.
Chair and ECH Bantel Professor for Professional Practice
Department of Civil, Architectural and Environmental Engineering
The University of Texas at Austin

Re: Dr. Brady Cox tenure and promotion

Dear Prof. Corsi:

In response to your letter of June 02, 2014, please find below my review which addresses the points you have requested.

1. Do you know Dr. Cox, and if so, for how long and under what circumstances?

I have known Dr. Cox over a period of many years as a colleague. Our interaction included professional conferences and meetings. Over the last three years Dr. Cox was a collaborator on a NSF project I am leading related to a deep excavation for the Transbay Transit Center in downtown San Francisco (The largest excavation in soft soil in San Francisco to build "the Grand Central Station of the West"). My evaluation is based on interactions with Dr. Cox, his professional reputation through third parties, and the promotion package provided to me for review.

2. What are the original, innovative, and/or important contributions that he has made in his field of research? Have his publications influenced the thinking of, or the methods used by, others in your field?

Dr. Cox has established himself as a leading authority in the area of geophysical and in situ testing in the geotechnical field. He has developed a strong reputation in his field. His leadership is evidenced by the national professional awards he has received, the competitive grants especially the NSF CAREER award, and the publications in major journals. He has clearly distinguished himself amongst his colleagues and is well regarded as an authority in the area of in situ geophyscial testing.

Dr. Cox's work has focused on the development and application of tools for reliable measurement of shear wave velocity (Vs) of geologic material. Vs is a fundamental soil parameter for evaluating nonlinear response of soils under static and dynamic conditions. The tools and procedures that Dr. Cox has developed in his papers has helped the profession in understanding the reliability of the various measurement techniques (e.g. REMI, Surface

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UNIVERSITY OF ILLINOIS
AT URBANA-CHAMPAIGN

Department of Civil & Environmental Engineering
RM 2230C NCEL, MC-250
205 N. Mathews Ave.
Urbana, IL 61801

methods). I have seen first-hand the application of these approaches to develop reliable estimates of changes in Vs due to large scale soil removal in a major urban excavation.

3. How would you assess Dr. Cox's development compared with others in his cohort at research-intensive universities?

Dr. Cox has a demonstrated record of research accomplishments and the ability to develop funding streams to continue supporting his research. His ability to win an NSF CAREER award places him in a small group of highly accomplished early career professionals. In examining in detail his bio-summary I am impressed by his accomplishments and qualifications. He is definitely on par with peers at his current career stage. He is amongst the top of his peers at similar academic institutions. He is a sought after collaborator for understanding ground response and failure after eartquakes (New Zealand, Japan, Haiti).

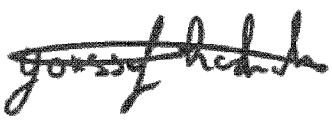
4. What is your perspective on Dr. Cox's promise for further professional growth and leadership?

Dr. Cox is well positioned for continued growth in his research program in the coming years. He has chosen areas of research that are expected to continue to grow. His demonstrated research and pioneering work puts him at the forefront of researchers in these areas. I would expect him to become a leader in these areas.

I am impressed by the overall record of Dr. Cox. He brings into the academic work strong practical approaches. This practical background appears to help Dr. Cox to focus on research problems that are important and relevant to the engineering community. He has strong research and service record. I believe that he will continue to be an active and productive faculty member and in the geotechnical engineering profession at large. I believe he has satisfied the criteria for tenure and promotion, and would endorse such action without any hesitation.

Feel free to contact me should you have additional questions.

Best regards



Youssef Hashash, Ph.D., P.E.
Professor, Geotechnical Engineering

Telephone:(217)333-6986 • Fax: (217)265-8041
E-mail: hashash@illinois.edu • http://www.illinois.edu/~hashash

Peoples, Hortensia D

From: Corsi, Richard L
Sent: Wednesday, July 16, 2014 3:54 PM
To: Peoples, Hortensia D
Subject: FW: On Behalf of Richard L. Corsi-- Letter of Reference for Dr. Brady Cox
Attachments: Cox_hashash_letter.pdf

Richard L. Corsi, Ph.D., P.E
Chair and ECH Bantel Professor for Professional Practice
Department of Civil, Architectural and Environmental Engineering
The University of Texas at Austin

Civil, Architectural and Environmental Engineering - http://www.caee.utexas.edu/ Twitter: @UT_CAEE

Co-Director, Center for Sustainable Development - http://soa.utexas.edu/csd Twitter: @UTSoA_CSD

From: Hashash, Youssef M A [mailto:hashash@illinois.edu]
Sent: Wednesday, July 16, 2014 3:46 PM
To: Corsi, Richard L
Subject: RE: On Behalf of Richard L. Corsi-- Letter of Reference for Dr. Brady Cox

Dear Dr. Corsi,

Please find attached is the requested letter.

Best regards

Youssef Hashash, Ph.D., PE, F.ASCE
Professor & John Burkitt Webb Endowed Faculty Scholar

Department of Civil & Environmental Engineering, RM 2230C NCEL, MC-250, University of Illinois at Urbana-Champaign
205 N. Mathews Ave., Urbana, IL 61801
☎ : (217)333-6986, : (217)265-8081 or (217)333-0464, : hashash@illinois.edu
Home Page: www.illinois.edu/~hashash
1-D Seismic Site Response, DEEPSOIL: www.illinois.edu/~DEEPSOIL *Save a tree. Print selectively*

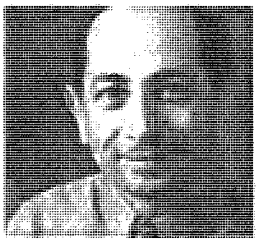
From: Peoples, Hortensia D [mailto:hpeoples@mail.utexas.edu]
Sent: Wednesday, June 4, 2014 1:40 PM
To: Hashash, Youssef M A
Subject: On Behalf of Richard L. Corsi-- Letter of Reference for Dr. Brady Cox
Importance: High

Dr. Hashash,

Home

Youssef Hashash

Professor
John Burkitt Webb Endowed Faculty Scholar



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hashash@illinois.edu [1]
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Research Website [2]

Youssef Hashash holds a B.S. (Massachusetts Institute of Technology 1987), M.S. (MIT, 1988), and Ph.D. (MIT, 1992), all in civil engineering. He has been on the faculty of the department of Civil and Environmental Engineering at the University of Illinois since 1998. Dr. Hashash worked as a Staff Engineer for the PB/MK TEAM in Dallas, Texas on the Superconducting Super Collider Project construction. In 1994 he joined the Geotechnical and Underground Engineering group at Parsons Brickerhoff in San Francisco, California, and was involved in many tunnel and deep excavation projects around the US and Canada.

Dr. Hashash has taught graduate and undergraduate courses in geotechnical engineering, numerical modeling in geomechanics and geotechnical earthquake engineering.

Dr. Hashash is a Fellow of the American Society of Civil Engineers and a member of the Earthquake Engineering Research Institute, the American underground Association and the International Tunneling Association. He also serves on Earth Retaining Structures Committee of the Geo-Institute of ASCE, and Performance of Structures during construction of SEI.

In 2002 Dr. Hashash was named a Beckman Fellow at the Center fo Advanced Studies at the University of Illinois. He is a 2001-2003 American Bridge Faculty scholar (UIUC). In 2000 Dr. Hashash was the recipient of the Presidential Early Career Award for Scientists and Engineers (PECASE) and the Arthur Casagrande Professional Development Award from the Geo-Institute

of ASCE. In 1999 he was a Notional Center for Supercomputing Application Fellow (UIUC). He received the James Crose Medal (ASCE, 1994) and Thomas Middlebrooks Awards (ASCE, 1997) for journal publications.

His work in computer modeling, in collaboration with other CEE faculty, has led to the issue of two patents [3] related to the determination of the properties of materials by testing the structural systems of which they are a part.

Research Overview:

Dr. Hashash's research interests include deep excavations, earthquake engineering, numerical modeling, and soil-structure interaction. He is also involved in the use of visualization and virtual reality techniques in geotechnical engineering applications.

Links of Interest:

UNIVERSITY OF WASHINGTON
SEATTLE, WASHINGTON 98195

132E More Hall
Box 352700

Phone: (206) 685-2642
Fax: (206) 685-3836

Department of Civil and Environmental Engineering

July 25, 2014

Professor Richard L. Corsi
Department of Civil, Architectural, and Environmental Engineering
301 E. Dean Keeton Street, C 1700
University of Texas
Austin, TX 78712-2100

Dear Prof. Corsi:

I am writing, as requested in your letter of June 2, 2014, to report on my evaluation of the scholarly record of Dr. Brady Cox, who is being considered for promotion to Associate Professor in the Department of Civil, Architectural, and Environmental Engineering at the University of Texas. I am well aware of Dr. Cox's work due to our shared interests in soil dynamics and geotechnical earthquake engineering.

I must admit to being somewhat surprised to receive this request since I did not realize that Dr. Cox had accepted the University of Texas position without tenure. My first thought, upon seeing the subject matter of the letter, was that he was being considered for early promotion to Professor. Given the fact that he is being considered for promotion to Associate Professor, a position I consider him to be overwhelmingly well qualified for, I will keep my remarks relatively brief and focused on the four questions you requested that I consider.

1. *Do you know Dr. Cox, and if so, for how long and under what circumstances?*

I first met Dr. Cox when he was a graduate student working with Professor Stokoe performing SASW tests in the Seattle area. Over the next couple years, I came to realize the high regard with which he was held in various conversations with Professor Stokoe. Since the time he joined the University of Arkansas, I have met and interacted with Dr. Cox at various professional meetings, workshops, and conferences. I have read many of his papers, and have heard him present his research on several occasions. I have not worked directly with Dr. Cox on any specific research project.

2. *What are the original, innovative, and/or important contributions that he has made in his field of research? Have his publications influenced the thinking of, or the methods used by, others in your field?*

Dr. Cox has established himself as a leader in geotechnical site characterization, particularly for the purposes of seismic hazard evaluation. Working with Professor Stokoe, he has become a leader in the development and application of geophysical testing techniques to geotechnical site

characterization, and has developed novel procedures for insitu measurement of stiffness, damping, and liquefaction behavior. He has done original work on the merging of site characterization from active and passive sources, and performed novel experiments oriented toward identifying topographic amplification behavior. His greatest contributions to date, however, have been in his site characterization work following large earthquakes. Dr. Cox has been a key member of almost every significant post-earthquake reconnaissance effort in recent years, and with strong earthquakes in Haiti, Japan, and New Zealand, there have been a lot of sites that have required characterization. His efforts on those projects, however, have gone well beyond simply performing SASW and other tests, and have included interpretation of soil behavior, site response, and damage patterns. I know the other members of the groups he has participated in these studies with, and they are unanimous in their praise for his broad and deep contributions to the reconnaissance and analysis efforts. Dr. Cox's publication list has a number of papers resulting from post-earthquake investigations with many authors – it is important to recognize that these investigations, let alone the papers they have produced, would not have gotten off the ground without the contributions of Dr. Cox and his students.

3. *How would you assess Dr. Cox's development compared with others in his cohort at research-intensive universities?*

He is certainly the top untenured geotechnical engineering faculty member in the country, and probably one of the top few that have not yet been promoted to full Professor. His receipt of both the CAREER and PECASE awards from NSF is unique, to my knowledge, among geotechnical engineering faculty both within and outside his immediate cohort. He has an excellent publication record, an outstanding record of funding, and a very strong reputation both nationally and internationally.

4. *What is your perspective on Dr. Cox's promise for further professional growth and leadership?*

Dr. Cox is already a very well respected researcher – he is recognized as one of the world's leading authorities on seismic methods of site characterization, and has broadened his research into other related areas. He has been extraordinarily active in post-earthquake investigations and defining advances and research needs coming from those investigations. He has shown that he can work effectively and productively with large groups of researchers, both domestically and internationally. Dr. Cox has been quite active in a number of professional organizations, particularly ASCE and the Earthquake Engineering Research Institute, and has been invited to make presentations at many professional meetings and conferences. I believe his promise for further professional growth and leadership is outstanding.

I can recommend, fully and without hesitation, that Dr. Cox be promoted to Associate Professor at the University of Texas. Please feel free to contact me if you should have any questions.

Sincerely,

Steven L. Kramer
Professor of Civil and Environmental Engineering

Peoples, Hortensia D

From: Steve Kramer <kramer@u.washington.edu>
Sent: Friday, July 25, 2014 5:57 PM
To: Peoples, Hortensia D
Subject: RE: Reminder - On Behalf of Richard L. Corsi-- Letter of Reference for Dr. Brady Cox
Attachments: CoxLetter.pdf; KramerBio-onepage.pdf

Dear Ms. Peoples,

Attached is a letter with my assessment of Dr. Brady Cox's qualifications for being promoted to Associate Professor. I apologize for missing the July 15 deadline, and hope that this letter is not too late to be useful. I have also attached a one-page bio for myself. Please let me know if you need anything else.

Best regards,

Steve Kramer

Dr. Kramer,

The Department of Civil, Architectural and Environmental Engineering at the University of Texas at Austin is considering Dr. Brady Cox for promotion to Associate Professor. As part of this process, we would appreciate if you would provide your candid assessment of his scholarly contributions. I have attached electronic copies of our formal letter, Dr. Cox's current CV, and five of his papers. If you would like to receive any other information, or a hard copy of the documents, please let me know.

We would appreciate receiving your letter by July 15, 2014. Thank you in advance for your assessment.

Sincerely,
Richard L. Corsi, Ph.D., P.E.
Chair and ECH Bantel Professor for Professional Practice
Department of Civil, Architectural and Environmental Engineering
The University of Texas at Austin
corsi@mail.utexas.edu

Hortensia

****

Hortensia Peoples
Civil, Architectural and Environmental Engineering
Cockrell School of Engineering
The University of Texas at Austin
301 East Dean Keeton - Stop C1700
Austin, TX 78712-1056
Phone: (512) 232-1704 or (512) 471-4921

Bio

Steve Kramer received his B.S., M.Eng., and Ph.D. degrees from the University of California, Berkeley in 1977, 1979, and 1985, respectively. Between his Masters and Ph.D. studies, he worked for a geotechnical consulting firm in the San Francisco Bay Area, concentrating on seismic problems and problems involving soft clay settlement/stability. His Ph.D. research at Berkeley, supervised by the late H. Bolton Seed, dealt with flow slides caused by static liquefaction.

Kramer joined the geotechnical group in the University of Washington Department of Civil Engineering in 1984. He has taught a wide range of undergraduate and graduate courses in geotechnical engineering, and advised numerous graduate students on Masters and Ph.D. research projects. His primary research interests include soil liquefaction, site response analysis, seismic slope stability, and hazard analysis. Much of his current research work is in the area of performance-based earthquake engineering, specifically the integration of probabilistic response analyses with probabilistic seismic hazard analyses. He has conducted research for the National Science Foundation, the Pacific Earthquake Engineering Research (PEER) Center, the Washington State Department of Transportation (WSDOT), the California Department of Transportation (Caltrans) and the U.S. Geological Survey.

Kramer has been the recipient of the Presidential Young Investigator Award from the National Science Foundation, the Arthur Casagrande Professional Development Award from ASCE, a Walter Huber Research Prize from ASCE, the Norman Medal from ASCE, and was named 2012 Academic Engineer of the Year by the Puget Sound Engineering Council. He also held the John R. Kiely Professorship in Civil Engineering at the University of Washington from 1997 – 2006. Kramer was a Senior Research Scientist in the International Centre for Geohazards at the Norwegian Geotechnical Institute (NGI) in 2003, and is also a member of the faculty of the European School for Advanced Studies in the Reduction of Seismic Risk (the ROSE School) at the University of Pavia in Italy.

Kramer is the author of the book *Geotechnical Earthquake Engineering* and co-developer of the computer programs, ProShake and EduShake. He has served on the Executive Research and Executive Management Committees of the Pacific Earthquake Engineering Research (PEER) Center. He has participated in several post-earthquake reconnaissance investigations, and is a member of the Advisory Panel for the Geo-Engineering Earthquake Reconnaissance (GEER) Association.

Kramer has served as News Correspondent for the Geotechnical Division of ASCE, chaired the organizing committee for the 1998 Geotechnical Earthquake Engineering and Soil Dynamics conference held in Seattle, and served on the editorial board of the ASCE *Journal of Geotechnical and Geo-environmental Engineering*. He currently chairs the Geo-Institute's Conference Coordinating Council. He is also active with the Earthquake Engineering Research Institute and the Seismological Society of America.

Kramer has served as a consultant to private firms and government agencies on projects in the U.S. and abroad. He has consulted on high-rise structures and bridges in the Seattle area and served on consulting boards for nuclear waste treatment plants, nuclear reactors, dams, seawalls, underground structures, and offshore structures/facilities.

DEPARTMENT OF THE ARMY
ENGINEER RESEARCH AND DEVELOPMENT CENTER, CORPS OF ENGINEERS
GEOTECHNICAL AND STRUCTURES LABORATORY
WATERWAYS EXPERIMENT STATION, 3909 HALLS FERRY ROAD
VICKSBURG, MISSISSIPPI 39180-6199

REPLY TO
ATTENTION OF

July 12, 2014

Richard L. Corsi, Ph.D., P.E.
Chair and ECH Bantel Professor for
Professional Practice
Department of Civil, Architectural
and Environmental Engineering
The University of Texas at Austin
301 East Dean Keeton - Stop C1700
Austin, TX 78712-1056

Dear Professor Corsi:

I understand that the Department of Civil, Architectural, and Environmental Engineering at the University of Texas at Austin is considering Assistant Professor Brady R. Cox, Ph.D., P.E. for promotion to Associate Professor. The purpose of this letter is to strongly support Brady's promotion. By way of background, I first met Brady in about 2004 when he was a doctoral graduate student at the University of Texas (UT) working with Professor Kenneth Stokoe. I have followed his career reasonably closely since then. Admiral Jack Buffington, U.S. Navy, Ret., at the University of Arkansas and I are friends and would talk regularly about research at Arkansas while Brady was there. We discussed Brady's activities, contributions, and impact at the University of Arkansas because he was an outstanding faculty member. I am also close friends with Professor Russell Green at Virginia Polytechnic Institute and Russell and I interact frequently. We have discussed Russell's and Brady's significant field investigations both in Haiti and New Zealand.

In my opinion, there are at least three critical talents that one needs to make real contributions and impacts, especially with students and in research. These include: (1) technical capabilities, (2) human relationship skills and (3) leadership and vision. It is clear that Brady has the technical skills to solve critical civil engineering problems, particularly those that lend themselves to non-destructive investigations of the sub-surface. He has demonstrated this talent through publications, by preparing successful research proposals, and by speaking at technical and professional meetings here and abroad. Additionally, he has excellent human relationship skills that allow him to work and

communicate well with others. These skills are particularly important in an academic environment where students are a critical product. These have been amply demonstrated by the teams he has either worked on or headed up and the co-authors with whom he has published. Rarely have I seen such extensive collaborations at this point in a young career. Lastly, and probably most importantly, Brady is a visionary leader. Just so you know, I define leadership as the ability to see the future and to talk about it in such a way that others can also see it. Leaders talk about the future they see in such a way as to motivate others to move in that direction with them, not because they have to, but because they want to. All Civil and Environmental Engineering Departments badly need faculty with leadership skills as I think teaching leadership is one area where most of our universities could improve. Brady is truly one of the young academics who has outstanding leadership skills.

I am aware of the recent investigative studies in New Zealand that Professor Cox has conducted and would like to briefly discuss their importance.

a. Deep seismic profiling of Christchurch. Given the complexity of the geologic profile (400 m of inter-bedded gravel and sand layers, as well as basin topography), this work is extremely important for proper accounting for site effects in determining the design ground motions as the city is rebuilt. You may not know that 80% of the buildings in the central business district of Christchurch were damaged beyond economical repair during the 2010-2011 Canterbury Earthquake Sequence. Brady is not only making unique contributions to the rebuilding of Christchurch but is among the leading academicians investigating this important area in the world.

b. Evaluation of competing liquefaction mitigation techniques in Christchurch. Liquefaction was pervasive and many of the eastern suburbs have been abandoned. The government has purchased the land and is evaluating options for remediating it. Brady and his UT colleagues have been using T-Rex (a one-of-a-kind vibroseis) to shake areas that have been remediated. For the first time ever, pore water pressure responses have been evaluated in-situ under carefully controlled shaking conditions. This work is critical to understanding the path forward in mitigating the liquefaction problem. The work involved developing

and installing unique, sub-surface instrumented arrays. The work is innovative, the results are having a direct and important impact in the rebuilding efforts of Christchurch, and the results will have a significant impact world-wide.

c. Comparison of various shear wave velocity (Vs) profile techniques and quantification of their uncertainty. The quantification of the uncertainty is the focus of Professor Cox's NSF CAREER proposal. Vs profiling of the sub-surface has become a key factor in designing critical structures like nuclear power plants, bridges, and high rise buildings. New Vs-profiling techniques have been proposed for performing these measurements. However, the validity, limitations, and uncertainty of these new techniques are unknown. Brady is the first person to do detailed comparisons of the techniques, as well as establishing their limitations and quantifying uncertainties in the results. He has quickly risen to a leadership position in this area which is extremely important as the profession has moved to probabilistic quantification of the seismic hazard.

In summary, I believe Brady Cox to be one of the top 2 or 3 academics in Civil Engineering in the USA, given his age and career stage. While it is difficult to see the future clearly, let me predict that Brady will be elected to the National Academy of Engineering in the next 20 years. If I could write a stronger letter, I would. Thanks for asking. He surely deserves promotion to Associate Professor at Texas.

If you have any questions, please either e-mail me or call me at 601-634-2234.

Sincerely,

W. F. Marcuson III
Director Emeritus
Geotechnical Laboratory

Peoples, Hortensia D

From: Marcuson, William ERD <William.F.Marcuson@usace.army.mil>
Sent: Thursday, June 19, 2014 1:36 PM
To: Peoples, Hortensia D
Cc: Marcuson Att Email; Marcuson, William ERD
Subject: Reference Brady Cox Letter (UNCLASSIFIED)
Attachments: Brady Cox Letter.pdf; Marcuson Introductory Bio Mar 2014.doc; WFM Bio Mar 2104.doc

Classification: UNCLASSIFIED
Caveats: NONE

Young Lady
As requested, see attached for my letter ref. Brady Cox. Please pass this info to Prof. Corsi.

Now, I think you also wanted a short bio. I have attached 2 bios. One is a paragraph and other is a page.
Use either.

Did I miss anything?? Do you need a hard copy in the mail? As I recall you do not. Correct??
If so come back to me.
Thanks for asking.

Bill

Dr. Marcuson,

The Department of Civil, Architectural and Environmental Engineering at the University of Texas at Austin is considering Dr. Brady Cox for promotion to Associate Professor. As part of this process, we would appreciate if you would provide your candid assessment of his scholarly contributions. I have attached electronic copies of our formal letter, Dr. Cox's current CV, and

William F. Marcuson, III, Ph.D., P.E., Hon. M.ASCE
2007 President, ASCE

William F. Marcuson III was President of the American Society of Civil Engineers (ASCE) and is one of the nation's leading civil engineers. He holds degrees in civil engineering from The Citadel, Michigan State University, and North Carolina State University. He has received five national awards from ASCE, including the Norman Medal, civil engineering's oldest honor. In 1995 he was honored by the National Society of Professional Engineers as their Federal Engineer of the Year. His career included research and administrative positions at the U. S. Army Engineer Waterways Experiment Station, where he served as Director of the Geotechnical Laboratory for nearly 20 years, prior to his retirement in 2000. He is the only engineer to be named the Corps of Engineer's Engineer of the Year twice (1981 and 1995), and he was honored by the Corps as their Civilian of the Year in 1997. He was elected to the National Academy of Engineering in 1996 for his contributions to the design and analysis of embankment dams. Marcuson delivered ASCE's Karl Terzaghi Lecture in 1999 and was elected National Honor Member of Chi Epsilon in 2014.

JANUARY 2014

William F. Marcuson III
Director Emeritus, Geotechnical Laboratory
U.S. Army Engineer Research and Development Center
U.S. Army Corps of Engineers
Attn: CEERD-GS, 3909 Halls Ferry Road
Vicksburg, MS 39180-6199
Phone: 601-634-2234
Fax: 601-634-4656

W. F. Marcuson III was born on June 16, 1941 in Winston Salem, North Carolina. He received a B.S. from the Citadel, an M.S. from Michigan State University, and a Ph.D. from North Carolina State University, all in civil engineering.

He joined the staff of the U.S. Army Engineer Waterways Experiment Station in 1970 and was director of the geotechnical laboratory from 1981 until his retirement in 2000. Marcuson was responsible for research, development, and analytical studies from both the theoretical and practical viewpoints in the fields of soil mechanics, engineering geology, rock mechanics, earthquake engineering, geophysics, military pavements, and Army mobility. His work responded to problems inherent in dam and levee design and structures; drainage design and construction; design, construction, evaluation, maintenance, and rehabilitation of both permanent and expedient military pavement systems; combat engineering and theater of operations construction; soil stabilization; and other related physical sciences. Marcuson worked in the United States and overseas as required by the activities of the Corps of Engineers, the Department of the Army, and other agencies.

Marcuson's research activities focused on experimental and analytical studies of soil behavior related to geotechnical problems, seismic design and analysis of embankment dams, and seismically induced liquefaction of soils. Much of his research has been on the application of work in these areas to remediation of sites susceptible to failure during earthquakes. He has authored more than 100 publications including several state-of-the-art publications on in situ testing and sampling, soil dynamics, seismic design and analyses of embankment dams, and seismic rehabilitation of earth dams. Marcuson serves as a consultant on geotechnical problems and projects of many types, especially those involving seismic remediation, to numerous governmental and private organizations both nationally and internationally.

He is a licensed professional engineer in Mississippi and Louisiana and a chartered engineer in the United Kingdom. He is a member of a number of professional and technical societies and is most active in the American Society of Civil Engineers (ASCE). Marcuson is an Honorary Member and Fellow of the ASCE. Marcuson has served ASCE in many capacities: secretary, vice chair, and chair of the Geotechnical Engineering Division; chair of the Committee on Soil Dynamics and the Committee on Publications; president of the Mississippi Section; District 14 representative on the Board of Direction; Zone II vice president and 2007 president. Additionally, he served as chair of the United States National Committee for the International Society for Soil Mechanics and Geotechnical Engineering (ISSMGE) as well as their Committee on Publications.

Marcuson's contributions and leadership have been widely recognized. For example, he received the Walter L. Huber Research Prize, the Government Civil Engineer of the Year, and the Norman Medal, all from ASCE; the Federal Government Engineer of the Year from the National Society of Professional Engineers; the Presidential Rank Award of Meritorious Executive from the Federal Government; and the Silver de Fleury Medal from the Army Engineer Association. He is the only engineer to be named the Corps of Engineers' Engineer of the Year twice (1981 and 1995) and the Corps recognized him as Civilian of the Year in 1997. He was elected to the National Academy of Engineering in 1996, delivered ASCE's Karl Terzaghi Lecture in 1999, and was elected the National Honor Member of Chi Epsilon in 2014.

DEPARTMENT CIVIL & ENVIRONMENTAL ENGINEERING
Faculty of Engineering

Professor Michael J Pender
B. E. (Hons), PhD, FIPENZ, MASCE
Professor of Geotechnical Engineering

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The University of Auckland
Private Bag 92019
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New Zealand

11 July, 2014

Professor Richard L Corsi
Chair, Department of Civil, Architectural
and Environmental Engineering
University of Texas at Austin.

Dear Professor Corsi

Re: **Dr Brady Cox** – tenure and advancement to Associate Professor

In reply to your request of June 02, I am pleased to provide my assessment of the tenure and promotion case for Dr Cox. I think I first met Cox after the Darfield earthquake of 2010 when he was in NZ as part of the international reconnaissance team. His outgoing friendly manner impressed me immediately. Clearly he establishes relationships with ease and can mix with a range of people graciously. I have seen him in NZ on subsequent occasions and also at international conferences of the Earthquake Geotechnical Engineering communities. Despite having met him on several occasions I have never had the pleasure of working with him directly.

Some years ago I suggested to one of my young colleagues here at the University of Auckland that developing skill in geophysical methods of site investigation could be a worthwhile investment. Many geotechnical engineers of my generation will say that they tried geophysics and it did not work. However, in the last decade or two there has been a renaissance in geophysical methods of site investigation (one of the leaders in this development being Prof. Ken Stokoe) so that these techniques are now able to provide high quality soil profile data. Among the reasons for this coming of age are: better instruments, more capable data logging equipment, and sophisticated software facilities for analysis of data obtained. The appearance of Dr Cox in NZ was perfect timing for my colleague and as consequence of working alongside Cox and his team he

gained invaluable insights and skills in this type of site investigation. I have been very impressed with the generosity in which this knowledge was transferred during joint site work, emails, telephone conversations, and Skype meetings. I view this as a very significant piece of international collaboration and I am most grateful for the part Cox played in this process of technology transfer. I am pleased to be able to say that my colleague is now doing independent high quality geophysical site investigation work around Auckland.

I think the area that Dr Cox is researching is a very important facet of geotechnical engineering. Geotechnical engineering has advanced to the state where we have a good understanding of the fascinating properties of soil as an engineering material. We now have amazingly capable software facilities so that it is possible to perform three dimensional, nonlinear, dynamic response analyses of soil masses and soil-structure systems. The limiting factor is our ability to arrive at reliable values for soil property data. This limitation in being addressed in the work being done by Dr Cox and colleagues.

Dr Cox has a most impressive cv which lists a considerable number of refereed journal publications since completing his PhD, not to mention an extensive list of conference publications and invited addresses. His list of referred journal publications demonstrates a real skill at teamwork and successful interaction with a wide range of researchers.

I have looked in detail at three of the papers that accompanied your letter: *In situ test method for evaluating coupled…*; *Frozen and unfrozen shear wave velocity…*; and *Intramethod variability ….*

To my eye the first of these reports on a truly innovative test technique. To be able to measure the cyclic pore pressure response of soil in situ has long been a wish of people working in earthquake geotechnical engineering.

The second presents very interesting information about shear wave velocity profiles in frozen and unfrozen ground. To me the result, that the effect of ground freezing is very shallow, was somewhat unexpected. But the thoroughness with which this investigation was done and reported leaves me in no doubt about the validity of the conclusions.

The third evaluates a method for obtaining site data based on passive noise – so useful work is possible without the services of a T-Rex!

I am aware of another important piece of research undertaken by Dr Cox: his measurement of the deep wave velocity profile beneath the Canterbury

plains. I was in the audience when these results were presented at a conference in Istanbul in June 2013.

I commented above about the quality of Dr Cox's cv. In an environment where research funds are difficult to obtain the list of grants Dr Cox has obtained or been a partner to is most creditable. It seems to me that this bodes well for the future career of Dr Cox and supports my assessment of him as a most promising young geotechnical academic who, in time, I expect to become a prominent professor and internationally recognised leader in geotechnical engineering.

You asked how Cox compares with other early career academics. I find this difficult to answer because I do not know other young academics at a similar stage in their careers in US universities. At the University of Auckland there are three components to assessing promotion applications: research, teaching, and service (to the University and the profession). In our system someone would expect to be promoted from lecturer to senior lecturer 6 or 7 years after completing a PhD. There is then a bar in the senior lecturer scale reached after 5 years of automatic increments; advancement across this bar is regarded as a very substantial promotion. If we had an applicant for a position with a cv such that of Dr Cox I would expect an offer to be made above the bar in our senior lecturer scale. Futhermore, his contribution, explained above, to transferring skills to my young colleague would be considered favourably as an aspect of service.

Yours sincerely

Michael Pender

Peoples, Hortensia D

From: Corsi, Richard L
Sent: Thursday, July 10, 2014 8:00 PM
To: Peoples, Hortensia D
Subject: Fwd: Promotion application report
Attachments: Brady Cox July 2014.doc; ATT00001.htm; NZ RS&T MJP cv November 2013.doc; ATT00002.htm

Sent from my iPad

Begin forwarded message:

> **From:** Michael Pender <m.pender@auckland.ac.nz>
> **Date:** July 11, 2014 at 5:43:18 AM GMT+8
> **To:** "'corsi@mail.utexas.edu'" <corsi@mail.utexas.edu>
> **Subject: Promotion application report**
>
> Dear Prof Corsi
>
> Attached is my letter assessing the promotion application of Dr Brady Cox. As requested, I have also included a brief cv.
>
> Yours sincerely
>
> Michael Pender

Michael Pender

https://unidirectory.auckland.ac.nz/profile/m-pender
Professor The University of Auckland: Civil & Environmental Engineering

Contact details

- +64 (0) 9 923 7919
- +64.9.923.7919
- m.pender@auckland.ac.nz

ENGINEERING BLOCK 1
Level 11, Room 401-1102
20 SYMONDS STREET

Biography

Professor of Geotechnical Engineering /Staff member at The University of Auckland since 1977.
Professor of Geotechnical Engineering since 1985.
Served as Head of Department.
In the University Research Committee, Scholarships Committee and Discipline Committee.
Received a Sustained Excellence in Teaching Award from the university in 2005.

After completing my PhD at the University of Canterbury I spent a period of 18 months as a post-doctoral fellow at Cambridge University in England. Before coming the university I was with the Ministry of Works and Development working at their Central Laboratories in Lower Hutt. There I was in charge of the Geotechnical Laboratory providing laboratory testing services for designers and interpreting the data so obtained.

Whilst with this university I have done various consulting work through Auckland Uniservices. Examples being peer review work for the Northern Gateway project extending SH1 through the hill behind Orewa to Puhoi and supervision of laboratory testing for Contact Energy related to the extraction of geothermal energy at Wairakei and Tauhara.

Since 2003 I have been appointed as a visiting professor to the European School for Advanced Studies in the Reduction of Seismic Risk (ROSE School) , University of Pavia. In the middle 90s I was the Australasian Vice President of the International Society for Rock Mechanics. For 2006 and 2007 I was the President of the New Zealand Society for Earthquake Engineering.

Over the years I have received 7 IPENZ awards, including the IPENZ Supreme Technical Award for Engineering Achievers – Building, Construction and Amenities in 2005 and the IPENZ Turner Award for Professional Commitment in 2006.

Currently I have several PhD students doing experimental projects related to the design of foundations to resist earthquake loading. It is intended that these will contribute to advances in foundation design methods.

Qualifications

BE (Hons)
PhD

Responsible for the Geomechanics Laboratory/ Member of the University Honours Committee

Research | Current

Limit state design of foundations.

- Earthquake resistant design of foundations.
- Soil/foundation/structure Interaction.
- Characterisation of the geotechnical properties of New Zealand soil and rock masses.
- Behaviour of closely jointed rock masses.

Research groups

- Geotechnical Engineering Research Group Leader (an informal grouping of staff and graduate students from the Faculty of Engineering and the Institute for Earth Science and Engineering).
- Technical Committee 4 (Earthquake Geotechnical Engineering) of the International Society for Soil Mechanics and Geotechnical Engineering

- Earthquake Resistant Design of Foundations (An EU funded Masters programme at the ROSE School, EU Centre, Pavia, Italy - July).

Committees/Professional Groups/Services

Professional affiliations

- Fellow, New Zealand Institution of Engineers (NZIE)
- Fellow, New Zealand Society for Earthquake Engineering (NZSEE)
- Life Member, New Zealand Geotechnical Society
- Member, American Society of Civil Engineers
- Affiliate, International Society for Soil Mechanics and Geotechnical Engineering
- Affiliate, International Society for Rock Mechanics.

MICHIGAN ENGINEERING
UNIVERSITY of MICHIGAN ■ COLLEGE of ENGINEERING

CIVIL AND ENVIRONMENTAL ENGINEERING
2340 G.G. BROWN
2350 HAYWARD STREET
ANN ARBOR, MICHIGAN 48109-2125

July 10, 2014

Professor Richard L. Corsi
The University of Texas at Austin
Cockrell School of Engineering
Department of Civil, Architectural and Environmental Engineering
301 E. Dean Keeton Street, C1700
Austin, Texas 78712-2100

RE: Dr. Brady Cox Promotion Review

Dear Prof. Corsi,

I have been following the career of Dr. Brady Cox from the time he started his dissertation research on seismic wave propagation (mid-2000s) because of my own long standing interest and research in this area. I had many conversations with his thesis advisor, Prof. Kenneth Stokoe II, during his dissertation research keeping track of Brady's directions and accomplishments. His accumulated research at the Universities of Arkansas and Texas on applications of surface wave methods (SWM) has moved the understanding, measurement, and application of seismic waves for engineering purposes a giant step forward. A specific outstanding example is that research in which he, for the first time, measured in-situ excess pore pressure development and the nonlinear shear modulus behavior of soil simultaneously by applying large cyclic shearing forces at the ground surface.

Dr. Cox, in concert with other geotechnical engineers and seismologists, has used SWM to determine properties of the earth immediately or soon after devastating earthquakes without having to employ expensive, intrusive and time-consuming drilling methods. An example of this type of work was started immediately after the earthquakes and is still underway at sites associated with the Christchurch, New Zealand (2010) earthquakes. Some features of the ground are perishable after an earthquake and quick evaluation is necessary to best understand the impact of ground shaking. I think it is significant and laudatory that Dr. Cox was chosen to participat in five site reconnaissance surveys in the aftermath of recent earthquakes, four of these as a participant in the prestigious Geotechnical Extreme Events Reconnaissance Association (GEER) site evaluation teams. These have been exceptional experiences for an assistant professor

For two of the team efforts, Haiti and New Zealand, it is important to realize that Brady Cox has been the de-facto principal author of the technical papers resulting from this work. His leadership role has been conveyed to me by other team members who were listed as co-authors. But beyond that, he has parlayed the knowledge gained in those reconnaissance efforts along with new methods of image analysis to Microzonation Mapping in the Port-au-Prince, Haiti as well as to site improvement at a New Zealand location. At home in USA, he has performed unique field studies of the New Madrid Earthquake zone using SWM for seismic site characterization.

Dr. Brady Cox has established himself as the leader of his national and international peer group engaged in research designed to reduce geotechnical consequences to man and the environment from earthquakes. The international attribute is appropriate as he has performed

significant work in at least five countries in addition to USA, namely, Japan, Turkey, New Zealand, Haiti, and Italy. During these international operations, he has worked with local leaders in their fields as well as USA leaders who participated in these efforts, furthermore he was lead author on multi- authored papers that included international leaders, Dr. Kenji Ishihara from Japan for example, and USA senior leaders in the earthquake engineering field.

While much of Brady's research has been focused on seismic site characterization, including earthquake hazards mitigation and remediation, he has established strong research interests, experience, and funding in other areas as well. He has explored the use of geosynthetics in flexible pavement bases where he garnered initial funding to start the research direction in one grant and later was successful with an award to continue that research direction amounting to more than three times the value of the initial contract.

As a logical extension of Brady's use of SWM for seismic site characterization, he broadened the scope of his research and included contributions from geology and seismology in the development of microzonation mapping for two urban areas, Fairbanks, Alaska and Port-au-Prince, Haiti. Applications of image analysis were incorporated in those microzonation exercises.

Brady has established a superior record in peer reviewed publications numbering 22 while an assistant professor. He has published in four highly respected and leading peer reviewed publications in their fields of coverage, ASCE, ASTM, Earthquake Spectra, and Soil Dynamics and Earthquake Engineering as well as in two other widely read journals, Geosynthetics International and TRB Journal of Transportation Research. The peer reviewed journal papers and the reviewed conference publications represent research completed in four major arenas of research, earthquake hazards mitigation and ground characterization, shear wave methods (SWM) in geotechnical engineering, geosynthetic reinforcement in flexible pavement design, and applications of imaging and geotechnical site characterization in microzonation mapping. This broad base of interests coupled with very impressive research funding and publication records bodes well for continued success by Dr. Cox.

Based on his research and publications, Prof. Cox has received three highly regarded awards: NSF Career Award and NSF PECASE Presidential Award, and the Hogentogler Award of ASTM. The first two for high quality and competitive research proposals and the third for and outstanding journal paper. He was also honored with the University of Arkansas Outstanding Researcher in Civil Engineering Award and Imhoff Award for Research of University of Arkansas College of Engineering while on the faculty at the University of Arkansas. Overall, an impressive group of awards for an assistant professor. His research has also led to a number of local and regional populous exposures including local schools, Arkansas Highway and Transportation department, and ASCE branch and Section meetings.

A combination of international research exposure and recognition, engineering extension activities at local and state levels, and awards of national attention, demonstrates an unusually strong dedication by Brady Cox, but also reflects well on his academic home.

Prof Cox as contributed to his profession as a member of four important professional organizations ASCE, ASTM, GEER and EERI. His membership and active participation in two committees of ASCE, ASTM Committee D-18 and four GEER earthquake reconnaissance teams attests to his commitment and interest in the important role of these organizations. His Associate Editor membership on the ASCE Journal of Geotechnical and Geoenvironmental Engineering

editorial board is also indicative of his desire to contribute to the profession but also reflects a level of confidence in his abilities by the Geo-Institute of ASCE. It is also very significant and important from my viewpoint that he has achieved registration as a Professional Engineer.

I have been closely following the careers of two individuals who are pursuing similar paths in Civil/Geotechnical engineering as Brady Cox. One, Associate Professor Dimitrios Zekkos, was promoted in June 2014 to associate professor with tenure at the University of Michigan, and the other, Professor Russell Green, was promoted to associate professor with tenure and then to full professor at Virginia Technological Institute and State University in 2013. These individuals came to my attention in 2002 and 2005 respectively because they were performing research in areas that overlapped my own research interests and at the time of their hires, promotion and tenure reviews were employed at the University of Michigan from which I retired in 2001. Professors Zekkos and Green both had outstanding records and had some limited professional experience before promotions, but Assistant Professor Brady Cox's research, funding and publications records eclipse both of these excellent engineers and tenured faculty members. I believe Assistant Professor Brady Cox would be promoted to Associate Professor with Tenure at the University of Michigan based on his established record.

Brady is well funded, well published, and well positioned to have an exciting and highly successful career in academics. His broad range of interests, ability to attract research funding and graduate students, and to publish in highly regarded outlets paint a glowing picture of the future for Dr. Brady Cox. Consequently, I enthusiastically support and recommend the promotion of Assistant Professor Brady Cox to Associate Professor with tenure at the University of Texas at Austin.

Very truly yours,

Richard D. Woods, Ph.D., P.E., NAE, Dist.M.ASCE, D.GE
Professor Emeritus
University of Michigan

Peoples, Hortensia D

From: Richard Woods <rdw@umich.edu>
Sent: Thursday, July 10, 2014 3:23 PM
To: Peoples, Hortensia D
Subject: Dr. Brady Cox Letter
Attachments: Cox Promotion Letter.pdf

Ms. Peoples,

My letter from Prof. Corsi did not contain an email address for my reference letter for Dr. Brady Cox. Because I have received data from you in the past about this promotion review, I am sending my letter to you with expectation that you can forward to Prof. Corsi. If this is an incorrect assumption, please tell me how to address my e-mail so it would reach Prof. Corsi.

RD Woods

Richard D. Woods, University of Michigan, Emeritus Professor

Office: 2350 Hayward, 2360 GG Brown

Phone: (734) 764-4303

Fax: (734) 764-4292

Email: rdw@umich.edu

Department of Civil and Environmental Engineering

2350 Hayward, 2360 GG Brown

Ann Arbor, Michigan 48109-2125

Richard D. Woods, Ph.D., professor of civil and environmental engineering in the College of Engineering, retired from active faculty status on May 31, 2002.

EDUCATION

Professor Woods received his B.S.C.E. and M.S.C.E. degrees from the University of Notre Dame in 1957 and 1962, respectively, and his Ph.D. degree from the University of Michigan in 1967. Before beginning his career at the University of Michigan, Professor Woods served as a lieutenant in the U.S. Marine Corps, conducted research at the Air Force Weapons Laboratory at Kirkland Air Force Base, and taught at Michigan Technological University. Professor Woods joined the University of Michigan faculty as an assistant professor in 1967. He was promoted to associate professor in 1971 and professor in 1976.

During his tenure, Professor Woods taught 15 different courses at the University, 7 of which he developed. His research focused on soil dynamics, foundation engineering, and engineering geophysics, and he authored over 80-refereed publications. Professor Woods also chaired or co-chaired 21 Ph.D. theses and served as associate chair (1987-94), interim chair (1994-96), and chair (1996-2001) of the Department of Civil and Environmental Engineering.

HONORS

Among Professor Woods' numerous awards are the Collingwood Prize from the American Society of Civil Engineers and the Terzaghi Lectureship from the ASCE Geotechnical Engineering Division. He was chair of the American Society of Civil Engineers' Geotechnical Engineering Division Executive Committee, president of the United States Universities Council on Geotechnical Engineering Research, and president of the Environmental and Engineering Geophysical Society.

The Richard D. Woods Award is named after the researcher and educator, whose contributions to the development of soil dynamics and geophysical methods have long-lasting impact on the practice of civil engineering, and who educated students at the University of Michigan between the 1960's and the early 2000's. This award was established at the University of Michigan in 2009.

DEPARTMENT OF CIVIL &
ENVIRONMENTAL ENGINEERING

July 10, 2014

Richard L. Corsi, Ph.D., P.E.
Chair and ECH Bantel Professor for Professional Practice
Department of Civil, Architectural and Environmental Engineering
The University of Texas at Austin
301 E Dean Keeton Street, C 1700
Austin, Texas 78712-2100

Re: Evaluation of Dr. Brady R. Cox for advancement to Associate Professor

Dear Professor Corsi:

In response to your request for an evaluation of scholarly contributions of Dr. Brady R. Cox, who is being considered for advancement in rank to Associate professor, I provide the following comments. It is a pleasure to do so. I have known Brady for the past 13 years as a student, a fellow researcher, and professional colleague. I served on Brady's PhD examination committee and am very familiar with his dissertation research and several of his other research projects

Awards:
Dr. Cox has received three prestigious national research awards in his young career: He was the Earthquake Engineering research Institute (EERI) Graduate Fellow for 2004, a very competitive and prestigious student award; he received a National Science Foundation (NSF) Faculty Early Career Development (CAREER) Award in 2011; and received a Presidential Early Career Award for Scientists and Engineers (PECASE) Award in 2012. These awards indicate Dr Cox is highly respected among his peers.

Research:
Dr. Cox is a lead researcher nationally and internationally in the development of accurate methods to quantify uncertainty in shear-wave velocity measurements. Shear-wave velocity is a prime soil property used by geotechnical engineers in the calculation of soil stiffness and seismic ground response. Shear-wave velocity is also a factor used by structural engineers in dynamic analyses of buildings and bridges. Dr. Cox's research focuses on development of statistically realistic confidence intervals for calculation of soil layer moduli and soil layer boundary depths. Confidence intervals are needed to overcome uncertainties in soil moduli and response calculations; these uncertainties have plagued use of this information by engineers. In particular, those who do not understand uncertainty also do not generally understand that uncertainty often leads to erroneous calculated results. In the past, when shear-wave velocity profiles did not agreed with soil layers noted on borehole logs, many investigators mistakenly assumed that lateral soil variability was the reason for the lack of agreement. However, analyses that incorporate uncertainty are capable of greatly reducing these past errors and can provide more accurate values. Thus, Dr. Cox's study of uncertainty in shear-wave velocity measurements is providing new tools for making accurate and more certain determinations of soil moduli, soil layer boundaries, and calculated seismic ground response values.

BRIGHAM YOUNG UNIVERSITY 368 CLYDE BUILDING PROVO, UTAH 84602

Dr. Cox was the first member of post-earthquake damage reconnaissance teams to take light-weight and highly portable surface-wave measurement equipment on NSF sponsored GEER investigations. Dr. Cox's work has shown that shear-wave velocity measurements are critically important to these missions. For example, during geotechnical investigations following the 2010 Haiti earthquake Dr. Cox's team measured shear wave velocity profiles at a number of sites in Port-au-Prince. No other equipment or procedures were available in Haiti to collect this type of subsurface information. These measurements were then used to check the correctness of an interpretative terrain/slope-based seismic site classification model suggested by personnel from the US Geological Survey. Surprisingly, the measured shear-wave velocities indicated that the seismic site classification model was inadequate for calculation of seismic ground responses. This finding led to a follow-up RAPID proposal by Dr. Cox and his team his team to produce maps of seismic parameters for use by Haitian and other engineers for design of buildings and other facilities in reconstruction of the Port-au-Prince area. Dr. Cox's team worked with United Nations personnel to train Haitian and other engineers to use the seismic parameter maps in performing code-based seismic design for the Port-au-Prince area. Dr. Cox reported that this application was a very rewarding impact of his research on practical engineering design and in meeting societal needs of this devastated community.

Another significant piece of work was Dr. Cox's investigations and shear-wave velocity measurements on the Big Island of Hawaii after a 2006 earthquake; his accurate shear-wave velocity measurements changed site classification categories used in structural design. Prior to Dr. Cox's work, much of the island was classified incorrectly and un-conservatively as rock-like Site Class B. Shear-wave velocity measurements proved that very few locations were Site Class B and that most locations were site soil-like classes C or D. This correction has a significant impact on local seismic design and seismic safety.

Dr. Cox is also currently involved with a major project in New Zealand that will have equally significant impact on the design ground motions for the rebuilding of Christchurch. He has measured shear-wave velocities to depths greater than 400 m using a novel approach of combining a large active-source with passive-wave field surface wave methods. With this procedure Dr. Cox is pushing the limits of profiling depth and how confidently such measurements can be made. This information is critical to understanding the ground motions that were recorded during the Christchurch earthquakes as scientists cannot explain some frequency-dependent amplifications because they do not know the depth of bedrock nor the thickness and nature of overlying soil layers. As such, they are not able to fully incorporate soil effects into design ground motions for rebuilding more than 1000 structures in the downtown area. Dr Cox's shear-wave velocity measurements should answer many questions concerning subsurface conditions and seismic response in Christchurch.

Another impact of Dr. Cox's research is on surface wave methods (SWM's) for measurement of shear-wave velocity that have become entrenched as powerful tool in geotechnical engineering practice. The output of an SWM is a subsurface profile of small-strain shear modulii and shear wave-velocities for use in engineering analyses and design. The expanding use of SWM's is driven by the desire to retrieve accurate and meaningful engineering soil parameters without the installation of costly and sometimes environmentally destructive boreholes. Traditionally, SWM's have been used to provide a single, deterministic velocity profile for each tested site. The profiles are often constructed without consideration of measurement/dispersion uncertainty that leads to errors being propagated through the inversion process and into the shear-wave velocity profile. In addition, an ever increasing number of researchers and practitioners are using SWM's without adequate understanding how of how parameters such as spatial sampling interval, array aperture, source proximity and signal-to-noise ratio influence the uncertainty of the resultant profiles. Also only anecdotal recommendations (often conflicting) have been available as guides for the selection of these parameters. As the profession moves toward with probabilistic design and performance-based engineering, the inability to quantify uncertainty from SWM's will be a major impediment to future progress. Dr. Cox's ongoing and future research is positioned to analyze uncertainties in SWM's and provide more definitive methodologies that will allow rigorous use of modern technology to facilitate future seismic analyses and structural design.

Publications:
Dr. Cox lists 23 refereed journal publications in his resume of which he is lead author on five; those five are provided for evaluators to read. These five publications cover a wide range of scholarly work conducted by Dr. Cox, including development of new testing techniques, field work at a frozen sites, use of field velocity measurements to define soil stiffness categories for building code design procedures, and leadership of post-earthquake investigation teams including compilation of geotechnical information, including additional data from team field tests, that is essential to geotechnical analysis of liquefied and non-liquefied sites. In addition, Dr. Cox has been active in attending conferences with 33 papers in conference proceedings, of which Dr. Cox is lead author for six. This body of work demonstrates technical transfer of Dr. Cox's research, his ability to work with research teams, and a quantity of publication and level of stature that is consistent with the rank of Associate Professor.

In summary, I believe that Dr. Cox meets the scholarly level expected of an Associate Professor at a major research university. I recommend that he be awarded that advancement.

Sincerely yours;

T. Leslie Youd
Professor Emeritus, Brigham Young University
NAE, Dist M ASCE, Hon M EERI

Phone: 801 226 2667
Email: youd1132@comcast.net

Peoples, Hortensia D

From: tyoud@et.byu.edu
Sent: Friday, July 11, 2014 1:06 PM
To: Peoples, Hortensia D
Subject: Re: On Behalf of Richard L. Corsi-- Letter of Reference for Dr. Brady Cox
Attachments: CoxUTeval.doc

Importance: High

Dr. Corsi:

My letter of evaluation for Dr. Brady Cox is attached. If you have questions or comments, please correspond further with me (Phone 801 226 2667)or email (youd1132@comcast.net).

Les Youd

> Dr. Youd,
>
> The Department of Civil, Architectural and Environmental Engineering
> at the University of Texas at Austin is considering Dr. Brady Cox for
> promotion to Associate Professor. As part of this process, we would
> appreciate if you would provide your candid assessment of his scholarly
> contributions. I have attached electronic copies of our formal letter,
> Dr. Cox's current CV, and five of his papers. If you would like to
> receive any other information, or a hard copy of the documents, please
> let me know.
>
> We would appreciate receiving your letter by July 15, 2014. Thank you
> in advance for your assessment.
>
> Sincerely,
> Richard L. Corsi, Ph.D., P.E.
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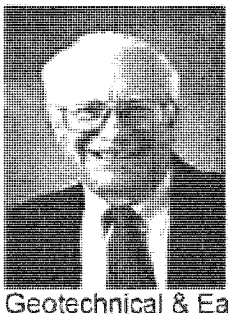
T. Leslie Youd



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EDUCATION:

T. Leslie Youd received his BES in civil engineering from Brigham Young University in 1964. He then attended Iowa State University where he received his PhD in civil engineering in 1967. He performed post-doctoral study in soil mechanics and engineering seismology from 1975 to 1976 at Imperial College of Science and Technology in London.

RESEARCH:

Youd's research has been primarily concerned with the phenomenon of soil liquefaction and the associated lateral spreading which can occur. Youd has published over 140 research papers. Youd's best-known papers are on the prediction of the magnitude of lateral spreading.

HONORS

Youd was elected to the National Academy of Engineering in 2005.

Youd was made an honorary member of the American Society of Civil Engineers in 2006, an honor bestowed upon less than 0.2% of its membership. He received the Distinguished Alumni Award in 2011 at Iowa State University.